BLM LIBRARY
88057668

7155263

ID: 80091068

[redacted]

HD
183
.L3
L392
1978

User Requirements Document

for a

Forestry Resource Inventory - URA

[redacted]

Information System

Phase I
Detailed Requirements Definition
June, 1978

BUREAU OF LAND MANAGEMENT
Library
Denver Service Center

PREFACE

The User Requirement Specifications contain the general high priority requirements of the Forestry Management Information System defined during the Detailed Requirements Definitions (DRD) Study, Phase 1, of the BLM Strategic Plan. They represent the first step in the design phase of the Forestry Management Information System - a summary of the users' requirements within the Resource Inventory - URA framework. This document is not a design document of the automated system itself.

A few comments on the organization of this document may facilitate your understanding of this package. The primary narrative portion of the document is included in Parts A (Introduction), B (User Environment), C (Forest Management Information Flow), D (Probable Impacts of the Data Base), and E (Problem Areas and Recommendations). The remainder is devoted to a detailed description of the outputs (F) and inputs (G).

In part F, each output is usually described by three pages. The first two consist of a completed output description form. This contains the output title, a brief description, proposed usage, frequency of production, etc. The third page is a sample of the described output, although in some cases the sample consists of several pages. The outputs are presented in the same sequence shown in the Information Flow, Figure 1 of Part C. The first position of the output (or input) identification code indicates Forestry and the second position is always an "O", e.g., FO-1 is the first Forestry output.

In Section G, each input is usually described by two pages. The first is a completed input description form, which is similar to the output description form. It will be either an Initial Data Base Generation form or a Data Base Maintenance form. The former is used only for one-time inputs, i.e., those which will establish or help to establish the data base but will not be used again to update it. All other inputs, those which will maintain the data base, and perhaps, also help to establish it, are described by a Data Base Maintenance form. The second page is a sample of the described input. In rare instances the sample consists of several pages. As with the outputs, their order follows that of the Information Flow, Figure 1 of Part C. The second position of the input identification code is always an "I", e.g., FI-3 is the third Forestry input.

This final package represents a consensus of the comments received by the review teams from Oregon, Idaho and Colorado and approved by W.O. 340 and the Field Advisory Committee, 15 February 1978. Only the inputs and outputs that will be initially automated are shown. Others may be added or produced as need develops.

USER REQUIREMENT SPECIFICATION REVIEWERS

COLORADO

Frank Knoll	Chief of Res., Craig DO
Roger Zortman	AM, Kremmling
Dean Stepanek	DM, Montrose DO, now Ukiah

IDAHO

Joe Zimmer	DM, Coeur d' Alene
Gus Vitolins	Coeur d' Alene DO
Nick Cozakos	DM, Burley
Chuck Haszier	DM, Shoshone
Don Watson	ISO
Ben Gomm	Idaho Falls, DO
Rex Christensen	Salmon DO

OREGON

Ron Sadler	Oregon SO
Ed Stauber	DM, Salem
Ron Kaufman	Coos Bay
Bob Carruthers	AM, Medford
Maurice Ziegler	AM, Prineville

WO AND FAC REVIEWERS OF FINAL RECOMMENDATIONS

Karl Bergsvik, WO 340

Paul Vetterick, WO 510

E.J. Petersen, ASD, Oregon

ACKNOWLEDGEMENTS

The following individuals actively participated in the Forestry DRD, Phase I:

Alaska	LaRalle Smith	State Forester	SO
California	Hal Westover	State Forester	SO
	Bob Barnes	Ukiah	DO
	Dean Finch	Folsom	DO
	Tom Katwyk	Redding	DO
Colorado	Don Mitchell	State Forester	SO
	Lorin Schwartz	Montrose	DO
	Jack Dossett	Canon City	DO
Idaho	Mert Lombard	State Forester	SO
	Al Fonken	Couer D'Alene	DO
	Ralph Cornwall	Couer D'Alene	DO
	Larry Hanlon	Boise	DO
Montana	Bill Torgerson	Butte	DO
New Mexico	Jim Fisher	Albuquerque	DO
Oregon	Chuck Hayhurst		SO
	Don Preston		SO
	Dave Nelson	(Eugene)	SO
	Charlie Thomas	Eugene	DO
Wyoming	Kai Petersen	State Forester	SO
	Bob Berg	Rawlins	DO
WO	Dick Bastin	510	
	Karl Bergsvik	340	
DSC	Sharon Heywood	D-200	
	Dave Estola	D-340	
	Tom Costello	D-340	
	Harlan Hayes	D-340	
	Fran Horak	D-340	
	Tom Sieverding	D-340	
	Dick Barbar	D-380	
	H. Gyde Lund	D-340	
	Russ Hanson	D-340	

Additional comments and suggestions were received from the Oregon State Office, Montana State Office, and Washington Office. The total contributions to this document by the field are very much appreciated.

H. Gyde Lund and Russ Hanson
Forestry Core Team Members

CONTENTS

Preface	i
Acknowledgments	iv
A. Introduction	FR-1
B. User Environment	FR-4
C. Forest Management Information Flow	FR-6
D. Probable Impacts of Data Base	FR-18
E. Problem Areas and Recommendations	FR-21
F. Outputs	FR-25
G. Inputs	FR-176

A. INTRODUCTION

This report covers the progress to date made on the Forest Management System being devised for the Strategic Plan. Specifically it covers the work done for Step 1, Phase I of the Strategic Plan (Detailed Requirements Definitions (DRD) for Resource Inventory and URA 3 and 4).

The Forest Management Program includes both technical services in support of other Bureau programs, and operational program responsibilities (activity plans for Forestry). Resource inventory data associated with these responsibilities also include data collected from extensive and intensive inventories of soils, climate, air quality, non-mineral geology, and water resources. The lack of established inventory procedures has created some difficulty in addressing inputs from resource systems other than timber and reporting on vegetal products other than timber.

The objectives of the Forest Management DRD efforts have been to:

1. Identify the jobs or tasks the district foresters do that apply to Resource Inventory, URA 3 and URA 4.

2. Identify how these jobs are accomplished through the use of hierarchy charts.

3. Identify the output products needed to accomplish the forest management job, specifically for URA 3 and 4, then identify the data that has to be entered into the system, the processes required to manipulate sample data into a useable form, and the outputs needed through the use of Input-Output sheets (IPOS) for URA 3 and 4 only.

4. Identify the frequency of the use of the data, inputs and outputs.

5. Compile a list of data elements, define these accurately and develop data processing codes for universal use in data processing programs.

6. Estimate the volume of inputs/outputs per geographic unit (District, Planning Unit, stand, etc.).

The following assumptions were used by the various teams in the design of the Forest Management system.

1. New data elements can be added, changed or deleted as needed.

2. The "system" can be changed as needed.

3. "Standard" inputs and outputs can be changed as needed.

4. The system will have the capability to respond to "ad hoc" requests, i.e., generalized retrieval capability.

5. There will be a terminal with graphic display at district and/or resource area offices.

6. The system will be able to calculate acreages from map inputs and will be able to reproduce maps.

7. The system will be able to display overlays of various data themes and be able to calculate, sort, and summarize the results of the overlays.

The URA 3 and 4 Forestry portions of the Bureau planning system call for information at the forest stand level within planning units on all forested lands. A stand is defined as "An aggregation of trees or other growth occupying a specific area and sufficiently uniform in composition (species), age, arrangement, and condition, to be distinguisnable from the forest or other growth on adjoining areas." The URA, Steps 3 and 4, requires such things as site quality or class, stand age, size class, stocking percent, forest type, problem conditions and trends by stands. Overlays, tabulations and narratives are required at the planning unit

level. In addition to the required reports, foresters need stand information displayed in a variety of ways for day to day work, i.e., "ad hoc" outputs. The information to produce these products must come from resource inventories.

Through the field participation during 1976 and 1977, outputs were identified for resource inventory and Steps 3 and 4 of Unit Resource Analysis (URA). Outputs consist of overlays, tables, and narratives. These are proposed for either hard copy, cathode ray tube, graphic or alpha numeric display, printouts or maps. Input sources consist of BLM overlays and data forms for resource inventory. This data is proposed to be supplemented with data transferred from other resource systems.

It should be kept in mind that the outputs of forestry information were restricted to the data required by resource inventory and the Unit Resource Analysis, either as specified or implied. Consequently, the identified products should be reviewed in this context. However, the data necessary to produce these products has application in most aspects of the Forestry program.

B. USER ENVIRONMENT

Under the present URA-3 and URA-4 system data is entered on transparent overlays, generally on the 15 minute USGS quad sheets. Ordinarily these overlays are used in the planning process to determine areas of conflict, such as commercial timber lands which may be valuable to wildlife or fisheries. Generally these types of uses enter into the conflict resolution process, and once decisions have been made, the URA overlays are not used regularly in day to day operations.

It should be stated that once data is available in an automated system, uses of the data for operational purposes will cause creation of a large number of ad hoc requests. These will be far more frequently requested than the URA forms.

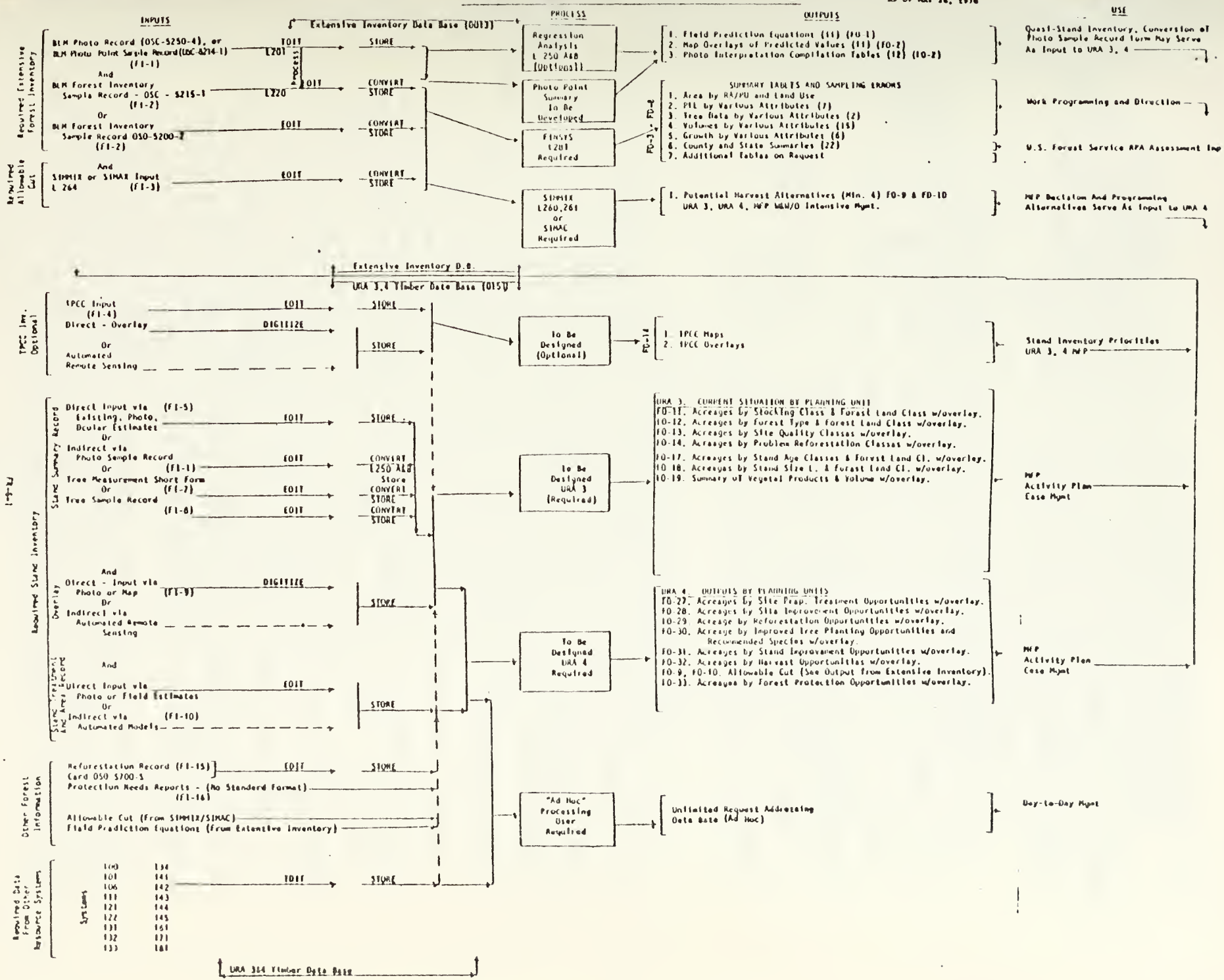
Automating the present system will allow more rapid calculation of such required outputs as acres of various treatments, acres of forest land class by size class, and numerous other tables. Presently the production of such tables, even though they may be produced infrequently, is time consuming.

In the area of resource inventory the forestry data is already heavily automated. The allowable cut program for the public domain states, SIMMIX, is presently on the Burroughs B-6500 at DSC. The Western Oregon SIMMIX program is located on the Bonneville Power Administration's CYBER 70 in Portland. The Western Oregon forest districts also have their intensive inventory data on the Bonneville computer and make certain runs using a SURGE program. The public domain forest inventory data is on tapes and is available through the Burroughs at Denver. It is expected that these capabilities will be continued, and more capabilities, such as REX TEXT, on line entry and retrieval of information, and text editing, will be required in the future.

Most of the present requirements for URA-3, URA-4 and resource inventory data will be for district forestry and planning personnel. Use by state office and Washington office people would seem to be relatively limited at this time.

FIGURE 1 - TIMBER PRODUCTION INFORMATION FLOW

AS OF MAY 26, 1978


INPUTS
PROCESS
OUTPUTS
USE
Extensive Inventory Data Base (0013)
Required Extensive Forest Inventory
Required Allowable Cut
BLM Photo Record (OSC-5250-4), or
BLM Photo Point Sample Record (OSC-4214-1)
(FI-1)
L201
EDIT
STORE
And
BLM Forest Inventory
Sample Record - OSC - 5215-1
(FI-2)
L220
CONVERT
STORE
Or
BLM Forest Inventory
Sample Record OSO-5200-2
(FI-2)
And
SIMMIX or SIMAC Input
L 264
(FI-3)
Regression Analysis L 250 A&B [Optional]
Photo Point Summary To Be Developed
FINSYS L201 Required
SIMMIX L260,261 or SIMAC Required
1. Field Prediction Equations (11) (FO-1)
2. Map Overlays of Predicted Values (11) (FO-2)
3. Photo Interpretation Compilation Tables (12) (FO-2)
SUMMARY TABLES AND SAMPLING ERRORS
1. Area by RA/PU and Land Use
2. PIL by Various Attributes (7)
3. Tree Data by Various Attributes (2)
4. Volumes by Various Attributes (15)
5. Growth by Various Attributes (6)
6. County and State Summaries (22)
7. Additional Tables on Request
1. Potential Harvest Alternatives (Min. 4) FO-9 & FO-10
URA 3, URA 4, NFP MBM/O Intensive Mgmt.
Quasi-Stand Inventory, Conversion of Photo Sample Record form May Serve As Input to URA 3, 4
Work Programming and Direction
U.S. Forest Service RPA Assessment Inp
NFP Decision And Programming Alternatives Serve As Input to URA 4
Extensive Inventory D.B.
URA 3,4 Timber Data Base (015U)
TPCC Inv. Optional
TPCC Input (FI-4)
Direct - Overlay
Or
Automated Remote Sensing
DIGITIZE
To Be Designed (Optional)
1. TPCC Maps
2. TPCC Overlays
Stand Inventory Priorities URA 3, 4 NFP
Required Stand Inventory
Stand Summary Record
Direct Input via (FI-5)
Existing, Photo, Ocular Estimates
Indirect via
Photo Sample Record (FI-1)
Tree Measurement Short Form (FI-7)
Tree Sample Record (FI-8)
Store L250 A&B
To Be Designed URA 3 (Required)
FO-11. Acreages by Stocking Class & Forest Land Class w/overlay.
FO-12. Acreages by Forest Type & Forest Land Class w/overlay.
FO-13. Acreages by Site Quality Classes w/overlay.
FO-14. Acreages by Problem Reforestation Classes w/overlay.
FO-17. Acreages by Stand Age Classes & Forest Land Cl. w/overlay.
FO-18. Acreages by Stand Size Cl. & Forest Land Cl. w/overlay.
FO-19. Summary of Vegetal Products & Volume w/overlay.
NFP Activity Plan Case Mgmt
Overlay
Direct - Input via Photo or Map (FI-9)
Indirect via Automated Remote Sensing
Stand Treatment and Area Record
Direct Input via Photo or Field Estimates
Indirect via (FI-10) Automated Models
To Be Designed URA 4 Required
URA 4. OUTPUTS BY PLANNING UNITS
FO-27. Acreages by Site Prep. Treatment Opportunities w/overlay.
FO-28. Acreages by Site Improvement Opportunities w/overlay.
FO-29. Acreage by Reforestation Opportunities w/overlay.
FO-30. Acreage by Improved Tree Planting Opportunities and Recommended Species w/overlay.
FO-31. Acreages by Stand Improvement Opportunities w/overlay.
FO-32. Acreages by Harvest Opportunities w/overlay.
FO-9, FO-10. Allowable Cut (See Output from Extensive Inventory).
FO-33. Acreages by Forest Protection Opportunities w/overlay.
NFP Activity Plan Case Mgmt
Other Forest Information
Reforestation Record (FI-15) Card OSO 5700-5
Protection Needs Reports - (No Standard Format) (FI-16)
Allowable Cut (From SIMMIX/SIMAC)
Field Prediction Equations (From Extentive Inventory)
"Ad Hoc" Processing User Required
Unlimited Request Addressing Data Base (Ad Hoc)
Day-to-Day Mgmt
Required Data From Other Resource Systems
Systems
100 101 106 111 121 122 131 132 133
134 141 142 143 144 145 161 171 181
TDIT
STORE
URA 3&4 Timber Data Base

C. FOREST MANAGEMENT INFORMATION FLOW (Figure 1)

Forest management information is divided into two data bases representing the types of data involved in the Forestry Program. These are the extensive forest inventory, and the URA 3 & 4 data base.

1. Extensive Inventory - Allowable Cut Data Base.

The information flow starts with the extensive forest inventory and allowable cut systems. Both provide inputs into the URA. The extensive inventory is a listing of actual resource data whereas the allowable cut is a biological simulation model which uses the inventory data plus management decisions to determine the reaction of the forest under different levels of management, harvest, protection and other inputs.

a. Inputs

The extensive inventories are conducted on both the PD and O&C sustained yield units. Inputs for the PD inventories are the Photo Point Sample Record (FI-1) and the Forest Inventory Sample Record (FI-2). Only the Forest Inventory Sample Record SIMMIX (FI-3)(Simulated Intensively Managed Mixed Stands) (for use in the PD) and SIMAC (Simulated Intensively Managed Allowable Cut-Clearcut Stands only) (for use in the O&C) input forms are required to produce the allowable cuts. The extensive inventories serve two purposes: to provide information for general functional programming and direction at the sustained yield unit level, and to provide a data base for the allowable cut computations. The extensive inventories do not directly provide the stand information required by the planning system. Some quasi-stand or in-place information may be generated through the field prediction phase of the PD inventories. This may be used then as an input for the URA 3 & 4 data base. The extensive inventory can provide some information down to the planning unit level.

The inventory is not affected by decisions made in the planning system; however, MFP decisions directly affect the allowable cut. Similarly, various alternative runs of the allowable cut may help to make or support MFP decisions.

The extensive forest inventory data base remains separate from the data base being developed for URA 3 and 4 at this time. The reasons for this are two-fold:

1) The extensive forest inventory and allowable cut system are operational. Including these operational data bases into a base that is just being developed would cause massive delays in generating summary tables and allowable cut runs.

2) The extensive inventory data base and the URA 3 and 4 data base may not really be compatible. The data stored in the URA data base, for forestry purposes, must be for a particular timber stand. The data in the extensive inventory base is statistical in nature and is not identified in place other than at the inventory or sustained yield unit. The stand inventory is location specific, whereas the extensive inventory is not. It may be possible to combine the data bases, but the systems at this time should not be combined. We have tied in or linked together the data elements of both data bases so that they follow standard definitions. The data element numbers are shown on the sample forest inventory input forms. (This has not been done for the SIMMIX/SIMAC inputs as yet - however, the information called for in the SIMMIX/SIMAC is contained in both data bases.)

The outputs also reflect data elements in the URA data base. Similar tables and reports are required in URA, showing stand rather than sustained yield unit data.

Existing input forms may need to be modified to be compatible with element fields in the dictionary. Since the extensive inventory data base is operational it may be an ideal candidate for the prototype data base. The problem of collecting data will be eliminated. The existing extensive inventory data base would continue to exist until the developmental URA 3 & 4 data base becomes operational. At that time the extensive inventory data base may be merged with the URA 3 & 4 data base but perhaps still retain its identity as a separate sub-system.

b. Outputs

The outputs from the extensive inventories and the allowable cut models include as a minimum the following:

1) Eleven field prediction equations (FO-1) for the PD sustained yield units with overlays in units where coordinates are stored on the file.

2) Twelve summary tables (FO-2) created from the PD Photo Point Sample File.

3) Summary tables and associated sampling errors (FO-3 - FO-8)showing:

a) Area by Resource Area/Planning Unit and Land Use.

b) Productive Forest Land by various attributes (7 tables).

c) Tree summaries by various attributes (2 tables).

d) Volumes by various attributes (15 tables).

e) Growth by various attributes (6 tables).

f) State and county summaries by various attributes (22 tables) as required for input into the US Forest Service assessment.

4) A minimum of 4 allowable cut runs (FO-9, FO-10)based on various URA & MFP decisions.

2. URA 3 and 4 Data Base

The URA 3 and 4 data base consists of data from an optional timber production capability classification, a required stand inventory, data from other types of forest sources and data from other resource systems also stored in the data base. The data are massaged to produce the outputs identified in URA 3.

a. Inputs

1) TPCC Inventory

The primary utility of the Timber Production Capability Classification inventory is to determine which lands can be managed for timber production. It is a broad type survey which would locate areas for which more detailed information may be desired. The information provided is particularly useful for ES and EAR preparation. TPCC may be done as a separate inventory or is more frequently done in conjunction with a stand inventory. Again, TPCC is a management decision on a stand basis where the decision reached is a combination of biological, geological, economic, engineering, etc., inputs. If done with the stand inventory, the TPCC may not be recognizable as a separate entity. The results in the end will be the same. The stand inventory identifies all lands available for timber production; the TPCC would not be required as a separate inventory.

When a separate survey, the TPCC inputs are an overlay depicting different class "islands" and some type of form indicating the information to be attached to these islands. The overlay is a manual operation involving soils mapping, photo interpretation and field mapping. Existing TPCC inputs may have to be modified slightly to be compatable with the dictionary. In the future, we may be able to automatically delineate TPCC islands with remote sensing techniques.

The outputs from the TPCC are the same as the inputs, i.e., an overlay showing lands that can be managed for timber.

2) Stand Inventory

The BLM Planning System, Unit Resource Analysis, Forestry Step 3 (BLM Manual 1605.43) spells out the required information for each stand of forested land. The key items for most initial palnning efforts are overlays and tabular summaries of forest types, existing volumes, and potential. The preplanning analysis computer determines exactly what information is needed.

The stand inventory provides the basic data needed to produce the required URA 3 and 4 products. The inventory consists of three parts: 1, stand summary information (FI-6 - FI-8) capturing biological data; 2, an overlay or map (FI-9) showing the location of the stands; and 3, area information and stand treatment potential recommendations (FI-10). We had to design a set of tentative standard forms and overlays to capture this data.

These forms are samples only. They are being slightly revised and printed, and will be available shortly for field testing. The four digit numbers on the forms refer to the standard definitions and coding of data elements found in the Phase I Data Element Dictionary.

The mapping of forest stands may be the same as the Site Write Up Area (SWAS) when the Soil-Vegetation Inventory Method (SVIM) is carried out if vegetation condition and sites are mapped rather than range conditions and sites. If SVIM is not to be carried out immediately, mapping may be done solely from aerial photography with stands defined by vegetation and topographic features.

The overlay (FI-9) shows the location of stand, stand boundaries, stand information to data base. At present, this input is a manual operation. In the future, it may be automated form remore sensing.

Portions may be completed indirectly, i.e., by the computer, by any of the following forms: BLM Photo Sample Record (FI-6), Tree Measurement Short form (FI-7) or Tree Sample Record (FI-8). All three forms may eventually be completed for a particular stand, but not necessarily for every stand. The forms and procedures are stepping stones, each collecting more and more detailed information about higher and higher priority land.

As indicated above, the system allows for a number of ways to collect the stand information. The stand data may initially be taken from existing files, or systems or by any of the other forms listed below. If existing files or systems are not available photo interpretation and field prediction equitions can be used to generate stand data wnere the equations have been developed. Stand photo and map data would be recorded on the BLM Photo Sample Record (FI-6). This data would be run through the field prediction or other equations developed in the extensive inventory, and some of the information on the Stand Summary Record produced.

BLM Photo Sample Record (FI-6)

One line on the draft BLM Photo Sample Record (FI-6) is completed for each stand delineated and serves as a basic input when existing information is absent. From the information recorded on the Photo Record, approximate cubic-foot volume estimates for all forest stands, also site index, yield capability, basal area, stand age, average stand diameter, and scribner board foot volumes, number of trees per acre, and percent

stocking estimates for stands of productive forest land covered by the extensive forest inventories can be generated. Statements as to the reliability of the equations to produce the estimates can also be provided. This information is fed directly into the data base. If the pre-planning committee needs additional information or more reliable estimates, stratification of the interpreted stands and field sampling must be used. The data from the photo interpretation can be used to help prioritize areas or strata for which field measurements are required.

Data to be collected and measured in the field varies with the value of the resource, and the needs of the decision maker. The draft forms (FI-5 - 10) allow the pre-planning analysis committee maximum freedom in determining what needs to be measured while still maintaining standardization Bureau-wide. Each progressively more detailed input would replace the information already in the data base.

The Stand Treatment and Area Data form (FI-10) must be completed for all stands (or SWAs) visited in the field. In addition one of the other three forms must be completed for all stands (or SWAs) visited in the field. These last three forms may be varied between strata but not within strata.

Stand Treatment and Area Data (FI-10)

This form describes recommended and past treatments for the stand and the area situation. Its use is primarily for URA 4 information. It is particularly important that a forester complete this form. This form must be used for all stands or SWAs visited in the field in the course of the inventory. In addition it may be used to input existing and proposed treatment records into the data base.

Stand Summary Record (FI-5)

This form contains all the information required to produce the URA 3 outputs and some of the URA 4 data. This form may be completed when ocular estimates will suffice. The value of the resource does not justify measurements. Generally this form is used directly, only in low priority strata or inventory units. This form may also be used to input existing stand data base.

Tree Measurement Short Form (FI-7)

This form is to be used when the inventory crew does not have experience necessary to make good ocular estimates; when some type of quantifiable measurements are needed; or when the value of the resource does not justify more detailed measurements. The form allows for use of either fixed area or variable plots. This form, if fully completed, will provide all of the URA 3 information.

Tree Sample Record (FI-8)

This form calls for the most detailed information and is intended to be used only in high value stands and sampling strata. Either fixed area or variable plots may be used. This form if fully completed will provide all URA 3 information required. The form is designed so that it may also be used as the basic input into the extensive forest inventory in lieu of the Forest Sample Record.

Existing systems and forms should easily fit into the URA 3 and 4 data base with minor modifications. Generally, the data from the input forms will have to be converted to the Stand Summary Record (FI-5) and the Stand Treatment and Area Data form (FI-10). The overlay will probably require no change.

3) Other Forest Surveys

Data from other forest surveys, such as Reforestation Records, may be stored in the data base. Most data elements required are now in the dictionary. Some of the existing forms may need slight revisions to be compatible with the definition and fields on file.

4) Other Resource Systems

The various teams have identified those data elements from other resources that are required either for URA or day to day planning. These include information at the stand level from the following systems:

100 - Global Definitions (Two or more resource areas are responsible for the data element.)

101 - Visual Resources

106 - Recreation Resources

111 - Minerals Inventory

121 - Lands Records

122 - Lands Resource Management
127 - Cadastral Survey
131 - Range Studies

132 - Range EIS

133 - Range Plants

134 - Range AMP

141 - Soils

142 - Vegetative Cover

143 - Air

144 - Geology

145 - Water

161 - Wildlife

171 - Planning

181 - Fire

The exact data elements required from these systems are indicated by "ties" in the dictionary, i.e., the data element appears in the Forestry (151) data element dictionary but the data element has a system number other than 151. Some of the utility is shown in the set of standard outputs. Most of the utility will be in the "ad hoc" requests.

b. Outputs

For URA 3 (FO-11 - FO-26) we've identified nine tables with corresponding overlays as being the standard outputs. For URA 4, (FO-27 - FO-35) tnere are seven tables with corresponding overlays and two tables alone. This does not imply that these are the only outputs that can or need be generated from the inventory data. They are only the initial goal of this phase.

In addition to these standard outputs, the districts will require the ability to produce any tables or overlays for which they have a need using the data base. These "ad hoc" requests will be of the greatest utility to the districts of all of the products produced by the system. These types of outputs will probably be the most frequently requested.

D. PROBABLE IMPACTS OF DATA BASE

The establishment of a data base for the Forestry program involves inventory data for both forest and other vegetal products. Of these types of resource data, only the extensive inventory procedure is currently included in bureau wide procedures. Initiation of the data base system will require testing and acceptance of some prototype intensive inventory procedure bureau wide. In addition, procedures will have to be developed for collection and recordation of other vegetal products, insect and disease systems, since none presently exist.

1. Inputs.

All existing forms for extensive inventories, timber stand inventories and other forest inventories will need to be revised slightly. The changes will be essentially renaming element headings to correspond with titles in the dictionary and expanding or decreasing the size of field for given elements. As a result of the DRD effort, some new input forms have been developed. These include the Stand Field Prediction Form, the Tree Sample Record, the Stand Summary Record, and the Stand Treatment and Area Record. The Tree Sample Record may also be used in place of the Forest Inventory Sample Records in future extensive inventories. These should be reviewed and tested before full implementation.

If existing forms or the tentative new forms are not going to be used as direct input, it will be necessary to convert the collected data to the Stand Summary Record or similar format before the data can be put on the data base.

Some additional data sources need to be tracked down and new input forms designed. These are in the protection and insect survey areas where

the initial information comes from another agency (generally U.S. Forest Service).

2. Processing.

The extensive inventory and allowable cut systems are nearly fully automated. Some work is still needed to produce summary tables thru FINSYS or a similar program.

The URA 3 & 4 data base is just in its infancy. While we have created some input forms, we have not begun to tackle the data processing procedures. Several programs are in existence and in use by the Bureau to convert tree data to stand data. These need to be analyzed and the best selected as a model for the processing system we are to design.

3. Outputs.

The current URA 1-4 portion of the planning system is a manual input operation. Various overlays are superimposed to visually determine conflict areas during the MFP process.

Computerizing the planning system and creating a data base may make the current URA required products obsolete. In all probability the manager will request certain "ad hoc" graphic and tabular outputs of selected areas rather than the standard products identified in 1605. The computer will be used to sort out areas of interest from areas of non-interest. Therefore, the standardized outputs in their entirety (i.e., a forest-type map of the entire planning unit) may not be requested but once every time a URA is prepared. On the other hand, a forest type map of a given section may be requested quite frequently for day-to-day work.

This type of output (search and sort) will be the most useful part of the system. At the present, there is no requisite output format. It will

vary with the particular job at hand. The greatest utility will come through search and sort or ad hoc requests of the data producing the desired reports. The system must be capable of manipuating and producing these. After a period of usage, some of these "ad hoc" outputs will certainly become standardized.

E. PROBLEM AREAS AND RECOMMENDATIONS

1. Dictionary Review.

Even though the DRD teams have reviewed the data element dictionary several times, it still contains errors and conflicts. A semi-final edit and a formal review by outside agencies such as the U.S. Forest Service is needed before we proceed with the details of Stage II of the system design. Undoubtedly, some data elements will be dropped, combined, changed or added. We need some way of carrying these edits through automatically so that they are reflected in the input and outputs we have designed. To do so manually has become a time consuming job.

The inputs and outputs should also be reviewed by the potential users to make sure that the data elements being used are the correct ones. This also should be accomplished before we launch into the systems design.

The outside review of the dictionary is essential. The purpose is two-fold: to make sure that we have standardization among agencies in definitions and coding and to make sure that we are not missing any elements that may be essential in cooperative reporting.

2. Output Review.

The outputs may also be reviewed by outside agencies for adequacy, particularly in situations in which we must supply the agency with information. An example would be providing the U.S. Forest Service with summary tables which are required in their preparation of the National Assessment of Forest and Range Lands.

3. Design.

a. In the area of design, we need to define key words, and identification numbers or identifiers, that will be the linking of all data

elements being stored by the various sources. This is essential so that we can provide the "search and sort" routines that each resource will be needing. This identifier or link may be the SVIM write up area identification number. If this were the link, the machine storage requirements would be the number of site write up areas in a state multiplied by the number of data elements on file (approximately 3,000). California with 100 million acres contains 2,500,000 individual 40-acre tracts. With 3,000 data elements per tract, a massive data storage capability is needed.

The write-up area may not be the key - particularly for small features such as wells, ponds, roads, etc. In this event and probably to suit all potential users, the link will have to be an X and Y coordinate. For each possible set of coordinates in the Bureau (down to 1 acre?) there would be 3,000 data elements attached. The storage requirements in either case would be phenomenal.

b. Flexibility must be built into the entire system. The users do not want to be locked into a particular set of outputs. They want flexibility as to what they can request and produce.

c. Another item worth mentioning in any discussion of an automated information system is the time and cost involved in inputting data. Systems development and hardware costs are just the tip of the iceberg. Data input will be enormously expensive and time consuming for both field and DSC people. No one has as yet, even attempted to estimate these costs and their impact on budgets. Further down the road is the dragon of update, who has as yet to be perceived, to say nothing of slain.

d. Another problem we have to face is lack of data to put into the system data base. We do not know of any district that has all the

required forestry data (much less the data from other resources) for all forested lands (productive and non-productive) at the stand level. The system will require this information, but where will it come from? The cost and time involved in collecting this data must also be accounted for and justified.

e. One final problem (hinted at above) is that of updating the data base once it is created. The system, to do this efficiently and in a timely manner, must be simple and the updating process must be restricted to those who have the authority to make changes. Changes in the data base must be made as the changes occur on the ground. If this is not done, then the users will lose faith in the reliability of the data on file.

4. Communications.

Another problem area that we foresee will be the communication problem between the user and systems designer or programmer. Usually the outputs are the programmer's interpretation of what the user wants. The present procedure within the Service Center of resources specifying the products to be produced and ADP writing the programs to create the outputs reflects this problem. Why not have trained resource specialists on each staff and district who can directly manipulate the data without going through a staff of intermediaries?

Another problem area will be to "sell" the system. People have been oversold before on what computerized information systems can do. They need to be told what actually will be done. Technology and systems are available but without the funding, equipment, and fully committed Resource and ADP support, the Strategic Plan will collapse.

The final problem lies in a conflict between Bureau ADP priorities and any given resource priorities. The top resource priority may be at the bottom of the list bureau wide. Consequently, that resource may not get anything done. We need the capability of meeting both priorities satisfactorily. A satisfactory method of solving this problem would be for S&T staffs to obtain ADP expertise and computer access within each resource staff.

F. OUTPUT

This section contains a description and a sample for each output required for this program area.

RESPONSE TIMES - GENERAL

The question concerning response times on the DRD Review appears to have generated a variety of estimates, most of them in the nature of guesses. This situation arose as the result of several problems.

1. Field people were not and are not familiar enough with the use of automated systems to know what can reasonably be expected in the way of response time.

2. The DRD teams were not supplied with a good idea of what equipment would be available at their site. A line printer or a plotter at a remote site makes a great deal of difference in response expectations as opposed to outputs to the main frame computers line printer mailed to the requestor.

3. The variety of outputs available makes it difficult to make a simple statement concerning response time. Usually a person would be willing to wait longer for a magnetic tape or punched cards, than for a single page of material displayed graphically.

4. The wide variety of needs and inquiries makes statements of response times quite difficult. It goes without saying that some people would be willing to wait fairly long periods of time for an answer to a fairly simple inquiry. On the other hand, a complex query involving a Congressional inquiry may require an extremely short response time.

Given these problems it would seem more practical to develop a series of response times based on the type of output, rather than an individual response time for each output form. This response time would then reflect the fact that such items of output as punched cards and magnetic tapes will be requested infrequently and not require a rapid response for most users. On the other hand many single "page" data displays or graphic displays will require almost immediate response. Below is a listing of a series of possible outputs and some suggested response times.

Printouts - 3 days desired - 1 week required, with up to two weeks for very complex outputs requiring programmer assistance. This assumes output will be mailed to the remote site.

Plots - (graphs, histograms, simple line charts) - 3 days desired - 1 week required

Maps - 3 days desired - 1 week required, up to two weeks required if maps are complex output requiring programmer assistance.

Data Displays

1. Initial response - States request has been received and entered into the system. Not to exceed 10 seconds.
2. Secondary response - Statement of status of program in the system i.e., executing, place in the input queue or output - 2 minutes desired.
3. Final response - Requested material is given. 30 seconds desired, overnight required.

Graphic Displays - Same specifications as data displays.

Magnetic Tape - 3 days desired - 1 week required

Punched Cards - 3 days desired - 1 week required

Prog. Area: 0151
Prep. By: Lund
Date: 2 August 77

FO-1

OUTPUT DESCRIPTION
Page 1 of 2

OUTPUT TITLE: Field Prediction Equations

OUTPUT FORM: Series of equations stored on the computer developed from extensive inventories.

OUTPUT DESCRIPTION: Equations utilize photo variables to predict field information. Used only as a quasi inplace inventory until further ground truth thru SIM or an operations inventory can be done.

USER(s): District Forester

LOCATION(s): District or Area

USAGE: Used as an inplace inventory until replaced by ground reconnaissance.

ACCESS LIMITATIONS: None

RESPONSE TIMES: DESIRED:

REQUIRED:

See Response Times - General

FREQUENCY OF PRODUCTION: For URA - 1 every 10 years/Stand/District (25 forest districts). Not required for the five Western Oregon districts. *See remarks.

DEPENDENCIES: Equations are produced at end of extensive inventory once every 10 years.

REQUEST PARAMETERS: Sustained yield unit, then site or stand identification number.

OUTPUT TITLE: Field Prediction Equations

SORT ORDER: Identical to request parameters.

ESTIMATED VOLUME: 11 equation/Stand times no. of Stands/inventory unit. (Now 17+ inventory units)

COMPUTATIONS/PROCESSES: See attached example and article. Multiple stepwise regression analysis - L 250 A, L 250 B.

ACCURACY: NA

SCALE: NA

ANNOTATIONS: NA

LEGEND: NA

REMARKS: Equations being developed only for PD Forest inventory units. Reference BLM Photo Point Sample Record, FI-1. Frequency figures are based on certain assumptions:

1. The only outputs called for will be those listed in the Use Requirements Document. The ability to produce ad hoc outputs will increase frequency of production to a marked degree.

2. All figures are for a district with forests or woodlands. Assume one terminal per district.

3. All outputs requested are for URA-3, URA-4, or resource inventory purposes. No case management use is assumed.

EXAMPLE EQUATIONS

FIELD PREDICTION EQUATIONS FOR INVENTORY (5705) UNIT 04 WESTERN WYOMING

1. FOREST INDEX (5766)[1/] (FOR) SEE = ±26 R = 0.5269

   FOR (5766) = 236.77 - 1.78 (SLP)(5746) + 6.10 (PHY)(5747) - 0.44 (UTMN)(5715) - 0.15 (DIA^2)(6009) + 0.00004 (ELV^3)(0431)

2. TREES PER ACRE (TPA)(5772) SEE = ±482 R = 0.4335

   (TPA)(5772) = 4815.09 + 12.99 (ELV)(0431) - 10.82 (UTMN)(7515) + 197.53 (DEN^2)(6510) + 3683.32 (DEN/DIA^2)(6510/6009)

3. STOCKING (STK)(5771) SEE = ±57 R = 0.4097

   STK = 79.56 - 15.43 (PHY)(5747) - 0.62 (FOR)(5766) + 0.09 (TPA)(5772) + 33.84 (DEN^2)(6510)

4. SITE INDEX (SI)(5750) SEE = ±8 R = 0.2741

   SI = 74.16 + 0.104 (PVOL)(6108) - 0.0002 ($UTMN^2$)(7515)

5. BASAL AREA/ACRE (BAAC)(5781) SEE = ±39 R = 0.5375

   BAAC = -42.34 + 1.70 (DIA)(6009) - 12.14 (PHY)(5747) + 1.45 (ELV)(0431) - 1.41 (TRMT)(5843) - 47.96 (DEN^2)(6510) ANSWER IN SQ. FT/ACRE

6. GROSS SCRIBNER (SCRB) (5789) SEE = ±30 R = 0.6075

   SCRB = -290.42 - 57.18 (DEN)(6510) + 0.57 (UTMN)(7515) + 0.65 (BAAC)(5781) + 5.64 (DENxDIA)(6510)(6009) ANSWER IN 100S BD. FT./ACRE

7. GROSS INT'L 1/8 (INT)(5789) SEE = ±38 R = 0.6091

INT = -0.33 + 1.30 (SCRB)(5789) ANS. IN 100S BD. FT./ACRE

8. STAND DIAMETER (SDIA)(6157) SEE = ±2 R = 0.6571

IF DEN 0 THEN SDIA - -23.26 - 10.61 (DEN)(6510) +0.10 (ASP)(6523) + 0.25 (SLP)(5746) + 0.06 (UTMN)(7515) + 0.04 (FOR)(5766) - 0.0003 ($_e$17DEN)(6510) + 0.21 (/HGTxDIA^2)(5799)(6009) + 7.61 (DEN^2)

ANSWER IN INCHES

IF DEN = 0 THEN SDIA = -12.53 + 0.104 (ASP)(6523) + 0.157 (SLP)(5746) + 0.04 (UTMN)(7515) ANSWER IN INCHES

9. GROSS CUBIC FOOT VOL. (CUBIC) SEE = ±7.7 R = 0.5896

IF DEN 0 THEN CUBIC = -14.47 - 5.11 (DEN)(6510) + 0.99 (SDIA)(6157) + 0.21 (BAAC)(5781) - 0.007 (DIA^2/DEN)(6009/6510) + 4.89 [Log_{10} (HGTxDIA)] (5799)(6009) ANSWER IN 100S CUBIC FEET

10. YIELD CAPACITY (YC)(6165) SEE = ±15 R = 0.2699

YC = 6.17 - 8.05 (DEN)(6510) + SI + 0.14 (SCRB)(5789) ANS. IN CUBIC FEET/ACRE/YEAR

11. STAND AGE (SAGE) SEE = ±58 R = 0.4516

SAGE = 55.48 + 6.03 (DIA)(6009) + 2.90 (ASP)(6523) + 1.24 (ELV)(0431) - 5.67 (SI)(5750) + 53.34 (DEN^2)(6510) ANS. IN YEARS

SEE = STANDARD ERROR OF THE ESTIMATE OF THE EQUATION AT ONE STANDARD DEVIATION

R = CORRELATION COEFFICIENT. ALL SIGNIFICANT AT 95% PROBABILITY LEVEL.

1/ FOREST INDEX IS AN EXPRESSION OF FOREST TYPE, BUT CANNOT BE USED AS FOREST TYPE. THE ONLY USE MADE OF FOREST INDEX IS FOR INCLUSION IN OTHER FIELD PREDICTION EQUATIONS.

CORRELATION COEFFICIENTS (R) FOR FIELD PREDICTION PHASE
BY INVENTORY UNIT

DEPENDENT VARIABLE	MEDIAN FROM LIT.	INVENTORY UNIT 01	02	03 *	04 *	05 *	06	07 *	08	09	10	11	12	13	14	15	16	17	18
Calc.Fors.	N.G.	.5685	.5757	.5081	.5269	.7212		.6237	.3646	.4359		.5473		.6467	.3573	.3963			
Ave. SI	0.3317	.3580	.4273	.5663	.2741	.4871		.6710	.5857	.7015		.7116		.6493	.6611	.7302			
Ave. YC	N.T.	.3609	.3862	.5610	.2699	.3876		.5793		.6145		.7048			.7307				
Std. Age	0.6130	.5200	.2323	.1405	.4516	.5531		.4299	.5797	.5784		.4924		.5138	.5972	.2860			
Std. Diam.	0.8565	.6302	.3965	.4743	.6571	.6213		.5370	.4262	.5346		.5441		.5591	.5724	.3319			
BA/AC	0.7300	.5026	.5679	.7195	.5575	.6510		.7546	.5985	.7590		.7049		.6645	.6991	.6098			
TPA	N.G.	.6176	.5347	.5372	.4335	.6175		.7319	.5605	.5844		.6513		.5573	.4173	.5230			
STK	N.T.	.5095	.5125	.6949	.4097	.6023		.7174	.4563	.6049		.5961		.5782	.5250	.3693			
Cubic GS/AC	0.7075	.5132	.5372	.7547	.5896	.6112		.7359	.7746	.7758		.6582		.7298	.7303	.6789			
Scrib GS/AC	0.7075	.4967	.4235	.6801	.6075	.4872		.7010	.7688	.7865		.6136		.7190	.6838	.6866			
Intl. 1/8 GS/AC	0.7075	.5006	.4259	.6881	.6091	.4844		.6994	.7697	.7898		.6108		.7347	.6884	.6783			
No.Cases		216	189	161	205	218		179	147	196		184		83	73	111			
Date	10 Jan. 1974																		

* Final correlation coefficients - no further testing going on.

SO WE KNOW WHAT WE HAVE -- BUT WHERE IS IT?

by
H. Gyde Lund
Inventory Design and Planning Specialist
Bureau of Land Management
Denver, Colorado

ABSTRACT

The Bureau of Land Management is currently using a Double Sampling scheme in its extensive forest inventories of the national resource lands. The first sample comes from photo interpretation. Photo points are permanently marked on the photos and USGS quad maps. The interpreted information is stored on magnetic tape along with the universal transverse mercator (UTM) coordinates of each point. Heretofore the only use we have made of the photo file is to provide a sampling frame for field observations (approximately one out of every 10 photo points becomes a field plot).

This paper describes the regression procedures we are investigating to relate field information back to the photo file. Among the items we are trying to predict for every photo point are:

a. Site index
b. Yield capability
c. Stand age
d. Average diameter
e. Basal area/acre
f. Number of trees/acre
g. Percent stocking
h. Gross cubic foot volume/acre
i. Gross Scribner volume/acre
j. Gross International 1/4 volume/acre.

Should we prove successful, we will be able to provide our field units with more in place data than normally obtained through an extensive inventory. We also hope to extend these procedures for use with other resource inventory, such as Range, Watershed and Wildlife.

Presented At
IUFRO Subject Group S4.02

Symposium
"Monitoring Forest Environment Through Successive Sampling"

SUNY College of Environmental Science and Forestry at Syracuse University

25 June 1974

SO WE KNOW WHAT WE HAVE -- BUT WHERE IS IT?

H. Gyde Lund[1/]

Background

Bureau of Land Management

The gross area of the United States is about 2.3 billion acres. The Federal government has held title to about four-fifths of this land at various times in U.S. history. Little by little, prime lands have been withdrawn for state or private usage or set aside for special uses such as National Forests, Parks etc. The scattered lands still remaining in the public domain fall under the exclusive jurisdiction of the Bureau of Land Management (BLM), U.S. Department of the Interior. These National Resource Lands, as they are now called, are essentially lands that nobody else wanted. When put together, these lands make up some 451 million acres or approximately 60% of all Federally administered lands in the United States.[2/] The Bureau maintains a staff of approximately 4000 employees to manage the forest, range, wildlife, watershed and mineral resources on these lands.

Forest Inventory Program

In 1971, the Bureau of Land Management began a series of extensive forest inventories of 17 units in eight western states. The inventories, per se, are not unlike those undertaken by other forest administrating agencies. A stratified double sample, with estimated stratum weights[3/] is being used to obtain information about the timbered lands.

Typically in this type of design, the first sample comes from detailed interpretation of gridded points on standard, vertical resource aerial photos. Th sample provides the tools for stratification, (usually based upon crown densit and stand height), and the estimates of stratum weights. Approximately one acre in every 80 acres are samples thru photo interpretation.

1/ Forest Inventory Design and Planning Specialist, Bureau of Land Managemen Denver Service Center, Denver, Colorado.

2/ U.S. Bureau of Land Management, 1972. "Public Land Statistics", U.S. Govt. Printing Office, 191 pp.

3/ Bickford, C. Allen, 1952. "The Sampling Design Used in the Forest Survey of the Northeast". J. For. 50(4):290-293.

The second sample comes from field measurements of randomly selected stratified photo points. Field observations provide estimates of location and tree attributes normally unobtainable from the aerial photos. Approximately one photo point in every 10 or one acre in every 800 acres is sampled in the field. The results of the second sample are used to provide estimates of volume and to adjust the photo sample.

To date, field work in 53% of the units has been finished. As the inventories are complete, we will be able to tell the land managers what they have, generating the typical tables of volumes and area statistics for each surveyed unit. Because of the scattered nature of the timbered lands and the limited manpower available in the Bureau, we are finding it necessary to extend our inventory data to provide more inplace information than is normally given by the field sample. Thru our "Field Prediction" phase of the data analyses, we hope not only to tell our managers what they have, but also to indicate where it is located.

Field Prediction Phase

In a nutshell, we are using the photo interpreted data to predict information that is normally obtained only in the field. Stepwise regressions are used. Photo characteristics serve as independent variables and corresponding field data as the dependent variables. The result is a series of equations that will produce "field" data for all photo points on file. The primary utility of the equations is to point the way to the land manager as to where to look for certain forest conditions.

Systems Description

From the start of our inventories, we view our photo sample as something more than just the first sampling base in the double sample scheme. Each interpreted point is treated as a type of permanent plot containing definite measured and objective information that can be duplicated, retrieved and manipulated at a later date, if need be.

Each photo point is permanently marked on the photo and plotted on 1:24,000 U.S. Geological Survey topographic maps. The Universe Transverse Mercator (UTM) coordinates of each point interpreted on productive forest land is read from the map and recorded on the Photo Point Sample Record. (Figure 1). Other information such as a crown density, diameter, height, aspect, slope, physiography, etc. is also interpreted and recorded according to set procedures.4/ All the recorded data is keypunched, verified, edited and stored on magnetic tape.

4/ See preliminary draft BLM Handbook 5214 "Photo Interpretation Handbook dated August 17, 1973 - Denver Service Center.

After the field plots have been established, field data such as site index, yield capability, average stand age, and average stand diameter are used as dependent variables in the stepwise regression analysis. The photo interpreted data, from the same points that became the field locations, are used as the independent variables.

Photo information such as crown density, crown diameter, stand [illegible] heights, are used as the dependent variable in the analysis to develop constants and coefficients to "predict" the field attributes.

The field items we are currently trying to "predict" are Site Index (AVG SI), Yield Capability (AVG YC), Stand Age (STD AGE), Stand Diameter (STAND DIAM), Basal Area Per Acre (BA/AC), Trees Per Acre (TPA), Percent Stocking (STK) and Gross cubic, Scribner and international volumes per acre.

A literature review (See appendix for listing) was conducted to determine what photo variables (and transformations or transgenerations) might be useful in predicting each of the above field items. Items not covered in the literature were subject to preliminary testing by the Bureau. The initial dependent and independent variables tested are shown in Table 1.

An Example

Our Western Wyoming inventory unit comprises 593,541 acres. A total of 6776 photo points were interpreted and approximately 200 field plots were established on productive forest land. Site index, stand age, etc. were determined for each field plot. This information was then run thru the regression analysis against the initial photo variables (Table 1).

Table 2 shows range of correlation coefficients found in the literature review and the ranges obtained to date in our analysis in Western Wyoming. The relatively low correlation coefficients obtained thus far may be attributed to the varied scales (1:12,000 to 1:20,000) and vintages (1951 to 1970) of the photography used in the study. If the photography were of the same scale and particulary of the same vintage, better results may have been had.

Limitations

The system as outlined above has limitations. Stratification in our units is generally been based upon crown density and stand height classes. Field plots, therefore, are selected from points having similar height - density characteristics. The field plot and photo point data are not entirely independent from one another. Thus, some bias will be introduced. In addition, a multitude of photo variables and combinations of variables may not be adequately sampled in the field. They may turn out as being significant in the regression analysis merely because a few of the attributes happened to have been sampled.

In spite of these shortcomings, we believe our "field prediction" phase to have merit, and great utility to our land manager.

TABLE 1 ORIGINAL AND TRANSFORMED INDEPENDENT VARIABLES TO BE USED IN INITIAL PREDICTION ANALYSIS BASED UPON LITERATURE REVIEW AND PRELIMINARY STUDIES

TYPE	INDEPENDENT VARIABLES NO.	DESCRIPTIONS	(0151-	DEPENDENT VARIABLES: AVG SI 5750	AVG YC 6165	STD ACE 5813	STD DIAM 6157	BA/AC	TPA 5772	STK 5771	CUBIC CRS/AC 6108	SCRIB CRS/AC	INTL CRS/AC 5789
ORIGINALS	1	DEN (Density)	(0151-6510)	x	x	x	x	x	x	x	x	x	x
	2	DIA (Crown Diameter)	(0151-6009)	x	x	x	x	x	x	x	x	x	x
	3	HGT (Height)	(0151-5799)	x	x	x	x	x	x	x	x	x	x
	4	P-VOL (Photo Volume)	(0151-6108)	x	x	x	x	x	x	x	x	x	x
	5	A (Aspect)	(0100-6523)	x	x	x	x	x	x	x	x	x	x
	6	S (Slope)	(0100-5746)	x	x	x	x	x	x	x	x	x	x
	7	P (Physiography)	(0151-5747)	x	x	x	x	x	x	x	x	x	x
	8	ELV (Elevation)	(0100-0431)	x	x	x	x	x	x	x	x	x	x
	9	TRT (Treatment)	(0151-5830)	x	x	x	x	x	x	x	x	x	x
	10	SOIL (Soil type)	(0100-7515)	x	x	x	x	x	x	x	x	x	x
	11	UTM-N (UTM North)		x	x	x	x	x	x	x	x	x	x
TRANSFORMATIONS	12	DEN^{-}		x	x	x	x	x	x	x	x	x	x
	13	DIA^{-}		x	x						x	x	x
	14	HGT^{2}				x	x	x	x	x	x	x	x
	15	$P\text{-}VOL^{2}$		x	x								
	16	ELV^{-}		x	x			x	x	x			
	17	ELV^{3}		x	x						x	x	x
	18	$UTM\text{-}N^{-}$		x	x								
	19	Loge DEN											
	20	Loge DIA				x	x						
	21	Loge S											
	22	Loge ELV		x	x								
	23	$e^{1/DEN}$				x	x						
	24	DEN x DIA									x	x	x
	25	DEN x DIA^{-}									x	x	x
	26	DEN x DIA^{2}						x	x	x			
	27	DEN x DIA x HGT									x	x	x
	28	DEN x HGT						x	x	x	x	x	x
	29	DEN x HGT^{2}									x	x	x
	30	DEN x HGT^{3}									x	x	x
	31	$(DEN \times HGT^{-})^{2}$									x	x	x
	32	$DEN^{2} \times HGT$									x	x	x
	33	DIA x HGT				x	x						
	34	$(DIA \times HGT)^{-}$				x	x						
	35	$(DIA \times HGT)^{3}$				x	x						
	36	DIA x HGT^{2}									x	x	x
	37	$(DIA \times HGT^{2})^{-}$									x	x	x
	38	$(DIA \times HGT^{2})^{3}$									x	x	x
	39	$DIA^{-} \times HGT$				x	x				x	x	x
	40	Log10 DIA^{-} x HGT									x	x	x
	41	Log10 (DIA x HGT)				x	x				x	x	x
	42	$DIA^{2} \times HGT$				x	x						
	43	DIA^{2} + DEN									x	x	x
	44	HGT + DIA		x	x	x	x	x	x	x			
	45	A + S		x	x								
	46	ELV + UTM-N		x	x								

X = Variable used in analysis.

Table 2. CORRELATION COEFFICIENTS ATTAINED
IN THE WESTERN WYOMING INVENTORY UNIT

24 April 74 HGL

DEPENDENT VARIABLES	CORRELATION COEFFICIENTS (R)		
	Literature Review		Test Unit 5/
	Low	High	To Date
Average Site Index (0151-5750)	0.1303	0.5330	0.2741
Average Yield Capability (0151-6165)	NOT FOUND		0.2699
Stand Age (0151-5813)	0.6130	0.6130	0.4516
Stand Diameter (0151-6157)	0.7400	0.9730	0.6571
Basal Area per Acre	0.6600	0.8000	0.5575
Trees per Acre (0151-5772)	NOT FOUND		0.4335
Stocking (0151-5771)	NOT FOUND		0.4097
GRS. Cubic Vol. per Acre (0151-6108)	0.4400	0.9750	0.5896
GRS. Scrib Vol. per Acre	0.4400	0.9750	0.6075
GRS. Intl. 1/8 Vol. per Acre (0151-5789)	0.4400	0.9750	0.6091

5/ For most cases, the correlation coefficient must be $>$ to 0.215 to be significant at the 5 percent (*) level of probability and $\geq$ 0.253 at the 1 percent (*) level.

Advantages

Thru use of stepwise regressions, we are able to develop prediction equations relative to each inventory unit. The resulting formula can be placed within the computer and "predicted data" calculated for photo points not visited in the field. This enables us to construct a data file for every photo point containing either actual or predicted field data. Originally our field data was collected for one acre in every 800, now it can be "played back" at the rate of one acre in every 80. Since each photo point has been identified by UTM coordinates and this information is stored on tape, it is possible, using a digitizer and a plotter, to map out the location of each point together with any desired photo data and/or field data. If the manager wanted to know the site indices of productive forest land in a given area, he could request that the computer and plotter to map out the locations and site indexes of the photo points falling within that area. Such a map will show the manager where to look for certain type stands.

When the manager does initiate a request, he will be given the formula that is used in calculating the predicted data. The formula may be used to generate estimates for any other areas within the border of the inventory unit as long as the same photo interpretation techniques are used. If desired, the newly interpreted data may be added to the data file thru use of the UTM coordinates.

Summary

Extensive forest inventories provide managers with statistics on what they have. However, very seldom can they determine where the material is located. This paper has described a method that the Bureau of Land Management is investigating to help the manager find out where the timber is. Stepwise regression analysis using photo interpreted variables and measured field variables are used to develop a series of prediction equations. The manager may use photo interpretation and the resulting equations to predict field critera for any given area within the inventory unit or he may have rough locations mapped out by the computer. In either case, the intent is to show the manager where to look for given items of interest. As such, the field prediction phase provides a "poor man's" operation inventory.

APPENDIX

LITERATURE USED IN REVIEW

Aldred, A.H. and F.W. Kippen. 1967. "Plot Volumes from Large Scale 70 mm Air Photographs". Forest Science, 13(4):419-426.

Aldrich, Robert C. and Nancy X. Norick. 1969. "Stratifying Stand Volume on Non-stereo Aerial Photos Reduces Errors in Forest Survey Estimates". U.S.D.A. For. Serv. Res. Pap. PSW 51. 14 pp.

Allison, G.W. and R.E. Breadon. 1960. "Timber Volume Estimates from Aerial Photographs". British Columbia Forest Service, Forest Survey Notes No. 5 25 pp.

Avery, T. Eugene. 1968. "Interpretation of Aerial Photographs". 2nd Ed. Burgess Pub. Co. Minneapolis, Minn. 324 pp.

Bernstein, David A. 1964. "A Test of Stand Age Estimation from Aerial Photos in Even-age Douglas-Fir". Photogram. Engin. 30:242-245.

Bonner, G.M. 1964. "The Influence of Stand Density on the Correlation of Stem Diameter with Crown Width and Height for Lodgepole Pine". For. Chron. Sep Vol. 40(3):347-349.

Bonner, G.M. 1968. "Stem Diameter Estimates from Crown Width and Tree Height The Commonwealth Forestry Review. Vol. 47(1) No. 131:8-13.

Chapman, Rober C. 1965. "Preliminary Aerial Photo Stand-Volume Tables for Some California Timber Types". U.S.D.A. For. Serv. Res. Note PSW-93. 9 pp.

Choate, Grove A. 1961. "Estimating Douglas-Fir Site Quality from Aerial Photographs". U.S.D.A. For. Serv. PNW Res. Pap. 45. 26 pp.

Dilworth, J. Richard. 1959. "Aerial Photo Mensuration Tables". Oregon State Univ. Agri. Exp. Sta., For. Res. Div., Res. Note No. 46. 28 pp.

Kirby, C.L. and W.D. Johnstone. 1970. "Estimation of Lodgepole Pine Diameter, Basal Area and Stand Volume from Measurements on Large-Scale Aerial Photographs". Canadian Forestry Serv. Forest Res. Lab. Info. Report, A-X-37. 22 pp.

Larson, F.R., K.E. Moessner and P.F. Ffolliott. 1971. "A Comparison of Aerial Photo and Ground Measurements of Ponderosa Pine Stands". U.S.D.A. For. Serv. Res. Note RM-192. 4 pp.

Loetsch, F. and K.E. Haller. 1973. "Forest Inventory". Vol. 1, 2nd Ed. BLV Verlagsgesellschaft Munchen Bern Wien. 436 pp.

Minor, Charles O. 1960. "Estimating Tree Diameters of Arizona Ponderosa Pine from Aerial Photographs". U.S.D.A. For. Serv. RM Res. Note 46. 2 pp.

Moessner, Karl E. 1962. "Preliminary Aerial Volume Tables for Pinyon-Juniper Stands". U.S.D.A. For. Serv. Int. Res. Pap. 69. 12 pp.

Moessner, Karl E. 1963. "Composite Aerial Volume Tables for Conifer Stands in the Mountain States". U.S.D.A. For. Serv. Res. Note Int. 6. 4 pp.

Moessner, Karl E. 1965(?). "Estimating Basal Area of Forest Stands Directly from Aerial Photos". SAF Proceedings, Div. of Forest Mgt. 127-130.

Pope, Robert B. 1962. "Constructing Aerial Photo Volume Tables". U.S.D.A. For. Serv. PNW Res. Pap. 49. 25 pp.

Sayn-Wittgenstein L. and Alan H. Aldred. 1967. "Tree Volumes from Large-Scale Photos". Photogrammetric Engin. 31(1):87-95.

Smith, J. Harry G. 1965. "Biological Principles to Guide Estimation of Stand Volume". Photogramm. Engin. 31(1):87-95.

Spurr, Stephen H. 1960. "Photogrammetry and Photo-Interpretation". 2nd Ed. The Ronald Press Co., N.Y. 472 pp.

Prog. Area: Forestry
Prep. By: Lund
Date: 22 August 77

FO-2

OUTPUT DESCRIPTION
Page 1 of 2

OUTPUT TITLE: Field Prediction Overlay

OUTPUT FORM: Overlay

OUTPUT DESCRIPTION: An overlay showing any one of 11 predicted values and actual values.

USER(s): District Forester
Area Forester

LOCATION(s): District and Area Office

USAGE: Used as a quasi-stand inventory. Can direct further or more detailed inventories to high priority areas.

ACCESS LIMITATIONS: None.

RESPONSE TIMES: DESIRED: REQUIRED:

See Response Time - General

FREQUENCY OF PRODUCTION: Once every 10 years or perhaps once every time an inventory is complete/district. There are approximately 25 districts with significant forest acreages exclusive of W. Oregon. Not required by the five Western Oregon Districts.

DEPENDENCIES:

Finalization of field prediction equations.

REQUEST PARAMETERS: See Stand Field Prediction Form or BLM Photo Point Sample Record.

OUTPUT TITLE: Field Prediction Overlay

SORT ORDER: Map quad lst, coordinates

ESTIMATED VOLUME: Number of map quads in sustained yield unit.

COMPUTATIONS/PROCESSES: Field prediction equations developed then applied to photo file from the extensive inventory. Predicted values using the photo data are printed out on a base map or overlay snowing the location and value of the prediction.

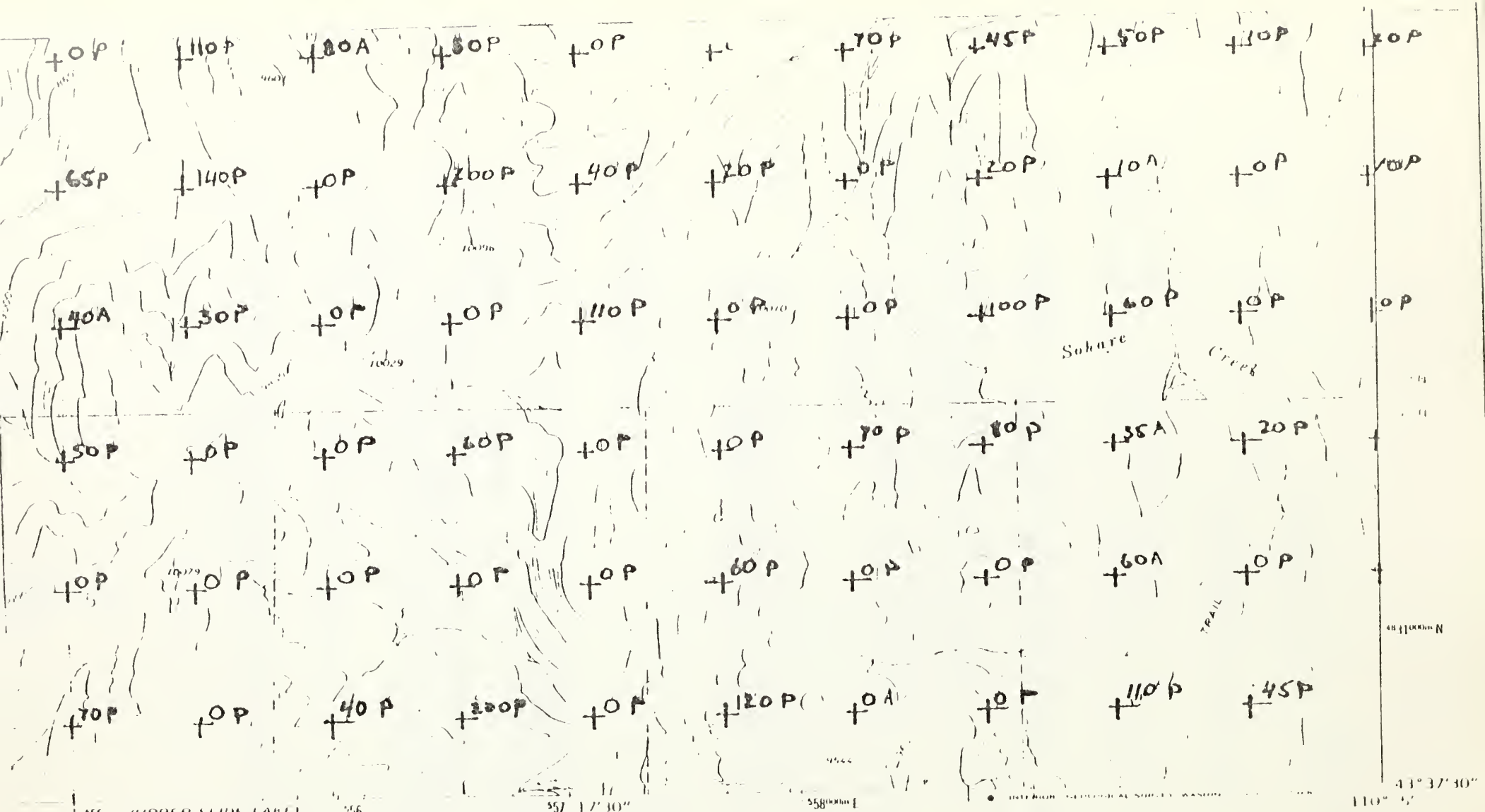
ACCURACY: ± 10 meters (plot of locations on ground)

SCALE: 1:24,000

ANNOTATIONS: + for location of photo/field plot
print predicted value
followed by A for an actual value or p for predicted

LEGEND: Title indicating item being predicted, i.e., Stand Age

REMARKS:



STAND AGES IN YEARS

151-6152

SCALE 1:

1000 2000 FEET

1 MILE

1 KILOMETER

CONTOUR INTERVAL 40 FEET

DATUM IS MEAN SEA LEVEL

A= Actual

P= Predicted.

WYOMING

QUADRANGLE LOCATION

ROAD CLASSIFICATION

Light duty

Unimproved dirt

GREEN MOUNTAIN, WYO.

N4337.5—W11015/7.5

1965

FR-44

MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS

OGICAL SURVEY, DENVER, COLORADO 80225, OR WASHINGTON, D.C. 20242

NBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

Prog. Area: 0151
Prep. By: Hayes
Date: 27 July 77

FO-3

OUTPUT DESCRIPTION
Page 1 of 2

OUTPUT TITLE: Productive Forest Land: Net Growing Stock Volume

OUTPUT FORM: Printout/CRT Display

OUTPUT DESCRIPTION: A group of two-dimensional tables giving volumes of timber for various parameters, e.g., type, site class, age class, etc. These tables are produced for productive forest lands only.

USER(s): Foresters; Planners; Managers.

LOCATION(s): Resource Area; DOs; SOs

USAGE: URA, planning, permanent reference, analytical reference, and reports to outside agencies, specifically the U.S. Forest Service.

ACCESS LIMITATIONS: None.

RESPONSE TIMES: DESIRED: REQUIRED:

See Response Time - General

FREQUENCY OF PRODUCTION: Once every ten years per forested district. There are approximately 30 such districts.

DEPENDENCIES: None

REQUEST PARAMETERS: State (0100-0690); District (0100-0543); Resource Area (0100-0418); Planning Unit (0100-1075); Forest Type, Existing Stand (151-5766); Stocking Class (151-5770); Stand Size Class (151-5810); Age Class (151-5813); Site Class (151-5751); Diameter Class (151-6157); Species (151-6100); Master Unit (0100-5891); County (0100-0546).

OUTPUT TITLE: Productive Forest Land Net Growing Stock Volume

SORT ORDER: Same as Request Parameters

ESTIMATED VOLUME: 6 pages per table; up to 15 per request.

COMPUTATIONS/PROCESSES: Computation and processing to be accomplished by FINSYS program, L283.

ACCURACY: NA

SCALE: NA

ANNOTATIONS: NA

LEGEND: NA

REMARKS: Each table may be requested by Cubic foot, Board foot International or Board foot Scribner. Additional tables of the same format are output automatically by FINSYS, containing variance and standard error of the statistics.

State _____ (0100-0004) District _____ (0100-0543) RA _____ (0100-0418) P.U. _____ (0100-1075)

Productive Forest Land Net Growing Stock Volume (Cubic ft.) by Type and Site Class (0151-5815)

Vegetative Sub Type (0132-2706)	Site Class (0151-5751)									
	1	2	3	4	5	6	7			TOTAL
	Thousand Cubic Feet (0151-5872)									
Douglas Fir (6001)	4000	5100	2700	3100	3500	2000	700			21100
Site Class Type (0151-5926)	A	A	A	A	A	A	A			-
Ponderosa Pine (6011)	400	500	1000	550	300	100	-			2850
Site Class Type	C	C	C	C	C	C	C			-
Engelmann Sp. (6035)	-	-	300	-	-	-	-			300
Site Class Type	G	G	G	G	G	G	G			-
TOTAL										

FO-3

State _____ (0100-0004) District _____ (0100-0543) RA _____ (0100-0418) P.U. _____ (0100-1075)

Productive Forest Land Net GS Volume (BF Int. 1/4) by Type and Site Class (0151-5751)
(0151-5815)

Vegetative Sub Type (0132-2706)	Site Class (0151-5751)									
	I	II	III	IV	V	VI	VII			TOTAL
	Thousand Board Feet (0151-5872)									
Douglas Fir (6001)	28000	35700	18900	21700	24500	14000	49000			191800
Site Class Type (0151-5926)	A	A	A	A	A	A	A			
TOTAL										

State _____ District _____ RA _____ P.U. _____

(0100-0004) (0100-0543) (0100-0418) (0100-1075)

Productive Forest Land GS Volume (BFS) (0151-5815) by Type and Site Class (0151-5751)

Vegetative Sub Type (0132-2706)	Site Class (0151-5751)									
	I	II	III	IV	V	VI	VII			TOTAL
	Board Foot Scribner - Thousands (0151-5872)									
Douglas Fir (6001)	28000	35700	18900	21700	24500	14000	49000			191800
Site Class Type (0151-5926)	A	A	A	A	A	A	A			
TOTAL										

State _____ (0100-0004) District _____ (0100-0543) RA _____ (0100-0418) P.U. _____ (0100-1075)

Productive Forest Land Net GS Volume (CF) by Type (0132-2706) and Age Class (0151-5813)

Vegetative Sub Type (0132-2706)	Age Class (0151-5813)									
	60	60-69	70-79	80-89	90-99	100-109	110-119	120-129	130	TOTAL
	Million Cubic Feet (0151-5872)									
Douglas Fir (6001)	700	900	1100	1400	1800	2000	2200	2400	3700	162000
TOTAL										

FR-50

(4 of 15)

FO-3

State _____ District _____ RA _____ P.U. _____
(0100-0004) (0100-0543) (0100-0418) (0100-1075)

Productive Forest Land Net GS Volume (BFS) by Type (0132-2706) and Age Class (0151-5813)

Vegetative Sub-Type (0132-2706)	Age Class (0151-5813)									
	60	60-69	70-79	80-89	90-99	100-109	110-119	120-129	130	Total
	Thousand BF International 1/8 inch rule (0151-5872)									
Douglas fir (6001)	4900	6300	7700	9800	12600	14000	15400	16800	25900	113400
Total										

FR-51

(5 of 15) FO-3

State _____ (0100-0004) District _____ (0100-0543) RA _____ (0100-0418) P.U. _____ (0100-1075)

Productive Forest Land Net GS Volume (BFS) by Type (0132-2706) and Age Class (0151-5813)

Vegetative Sub-Type (0132-2706)	Age Class (0151-5813)									
	60	60-69	70-79	80-89	90-99	100-109	110-119	120-129	130	Total
	Thousands of BF Scribner rule (0151-5872)									
Douglas fir (6001)	4900	6300	7700	9800	12600	14000	15900	16800	25900	113900
Total										

EQ-52

(6 of 15) FO-3

State _____ District _____ RA _____ P.U. _____
(0100-0004) (0100-0543) (0100-0418) (0100-1075)

Productive Forest Land Net GS Volume (CF) by Age Class (0151-5813) and Stand Size Class (0151-5810)

(0151-5813) Age Class Stand Size Class Type (0151-5875)	Stand Size Class (151-5810)					
	Poles D	Small Sawtimber D	Medium Sawtimber D	Large Sawtimber D		TOTAL
	Thousand Cu. Ft. (0151-5872)					
70-79	700	900	500	0		2100
TOTAL						

State _____ District _____ RA _____ P.U. _____

(0100-0004) (0100-0543) (0100-0418) (0100-1075)

Productive Forest Land Net GS Volume (BFI) by Age Class (0151-5813) and Size Class (0151-5810)

(0151-5813) Age Class / Stand Size Class Type (0151-5875)	Stand Size Class (0151-5810)					
	POLE D	Small Sawtimber D	Medium Sawtimber D	Large Sawtimber D		TOTAL
	Thousand BF International 1/8-inch rule					
70-79	4900	6300	3500	0		14700
TOTAL						

State _____ District _____ RA _____ P.U. _____
(0100-0004) (0100-0543) (0100-0418) (0100-1075)

Productive Forest Land Net GS Volume (BFS) by Age Class (0151-5813) and Size Class (0151-5810)

(0151-5813) Age Class / Stand Size Class Type (0151-5875)	Stand Size Class (0151-5810)					
	Pole Timber D	Small Sawtimber D	Medium Sawtimber D	Large Sawtimber D		TOTAL
	Thousand BF Scribner rule					
70-79	4900	6300	3500	0		14700
TOTAL						

FR-55

(9 of 15) FO-3

State _____ District _____ RA _____ P.U. _____

(0100-0004) (0100-0543) (0100-0418) (0100-1075)

Productive Forest Land Net GS Volume (CF) by Type (0132-2706) and Size Class (0151-5810)

Vegetative Sub Type (0132-2706) / Stand Size Class Type (0151-5875)	Stand Size Class (0151-5810)					
	Pole Timber	Small Sawtimber	Medium Sawtimber	Large Sawtimber		TOTAL
	D	D	D	D		
	Thousand CU. FT.					
Douglas Fir (01)	700	900	1000	1100		3700
TOTAL						

FR-56

(10 of 15) FO-3

State _____ District _____ RA _____ P.U. _____

(0100-0004) (0100-0543) (0100-0418) (0100-1075)

Productive Forest Land GS Volume (BFI) by Type (0132-2706) and Size Class (0151-5810)

Vegetative Sub Type (0132-2706) / Stand Size Class Type (0151-5875)	Stand Size Class (0151-5810)					
	Pole Timber D	Small Sawtimber D	Medium Sawtimber D	Large Sawtimber D		TOTAL
	Thousand BF International 1/8-inch rule					
Douglas Fir (6001)	4900	6300	7000	7700		25900
TOTAL						

State _____ District _____ RA _____ P.U. _____
(0100-0004) (0100-0543) (0100-0418) (0100-1075)

Productive Forest Land Net GS Volume (BFS) by Type (0151-5766) and Size Class (0151-5810)

Vegetative Sub Type (0132-2706) / Stand Size Class Type (0151-5875)	Size Class (0151-5810)					
	Pole Timber D	Small Sawtimber D	Medium Sawtimber D	Large Sawtimber D		TOTAL
	Thousand BF Scribner rule					
Douglas Fir	4900	6300	7000	7700		25900
TOTAL						

State _____ (0100-0004) District _____ (0100-0543) RA _____ (0100-0418) P.U. _____ (0100-1075)

Productive Forest Land Net GS Volume (BFI, 1/4) by Diameter Class and Species

(0151-6157) Diameter Class	Species (0151-6100)					
	Douglas Fir (01)	Ponderosa Pine (11)	Engelmann Spruce (35)			TOTAL
	MBF Int. 1/4					
19-20.9	7000	4900	3500			15400
TOTAL						

State _____ (0100-0004) District _____ (0100-0543) RA _____ (0100-0418) P.U. _____ (0100-1075)

Productive Forest Land Net GS Volume (CF) by Diameter Class and Species

(0151-6157) Diameter Class	Species (0151-6100)					
	Douglas Fir (01)	Ponderosa Pine (11)	Engelmann Spruce (35)			TOTAL
	Thousands of Cubic Feet					
19-20.9	1000	700	500			2200
TOTAL						

FR-60

(14 of 15) FO-3

State _____ District _____ RA _____ P.U. _____

(0100-0004) (0100-0543) (0100-0418) (0100-1075)

Productive Forest Land Net GS Volume (BFS) by Diameter Class (0151-6157) and Species (0151-6100)

(0151-6157) Diameter Class	Species (0151-6100)					
	Douglas Fir	Ponderosa Pine	Engelmann Spruce			TOTAL
	MBF					
19 - 20.9	7000	4900	3500			15400
TOTAL						

FR-61

(15 of 15) FO-3

Prog. Area: 0151
Prep. By: Hayes
Date: 27 July 77

FO-4

OUTPUT DESCRIPTION
Page 1 of 2

OUTPUT TITLE: Productive Forest Land Area

OUTPUT FORM: Printout/CRT Display

OUTPUT DESCRIPTION: Two-dimensional table giving acreages by parameters indicated.

USER(s): Foresters; Planners Managers.

LOCATION(s): Resource Area; DOs; SOs.

USAGE: URA and planning. Permanent reference, analytical reference and reports to outside agencies.

ACCESS LIMITATIONS: None

RESPONSE TIMES: DESIRED: REQUIRED:

See Response Time - General

FREQUENCY OF PRODUCTION: Once every ten years per district. Approximately 30 districts will require this type of information.

DEPENDENCIES: None

REQUEST PARAMETERS: State (0100-0004); District (0100-0543); Resource Area (0100-0418); Planning Unit (0100-1075); Forest Type (151-5766); Land Use (151-6111); Stocking Class (151-5770); Stand Size Class (151-5810); Age Class (151-5813); Site Class (151-5751); Master Unit (0100-5891); County (0100-0546).

OUTPUT TITLE: Productive Forest Land Area

SORT ORDER: Same as Request Parameters

ESTIMATED VOLUME: 4 pages per table; 7 tables per request.

COMPUTATIONS/PROCESSES: Computation and processing to be accomplished by FINSYS program, L283.

ACCURACY: Nearest Acre.

SCALE: NA

ANNOTATIONS: NA

LEGEND: NA

REMARKS: Additional tables containing variance and standard error of the statistics by FINSYS. Their formats are identical to those of FO-3.

State _____ District _____ RA _____ P.U. _____

(0100-0004) (0100-0543) (0100-0418) (0100-1075)

Productive Forest Land Area (Acres) by Forest Type (0132-2706) and Stocking Class (0151-5770)

Vegetative Sub Type (0132-2706)	Stocking Class (0151-5770)					
	Non Stocked	Poorly Stocked	Medium Stocked	Well Stocked		TOTAL
	Acres					
Douglas Fir (6001)	100	250	1500	1200		3050
Ponderosa Pine (6011)	50	300	700	550		1600
Engelmann Spruce (6035)	--	50	300	250		600
TOTAL	150	600	2500	2000		5250

State _____ District _____ RA _____ P.U. _____

(0100-0004) (0100-0543) (0100-0418) (0100-1075)

Productive Forest Land Area (Acres) by Stand Size Class (0151-5810) and Stocking Class (0151-5770)

Stand Size Class (0151-5810) & Stand Size Class Type (0151-5875)	Stocking Class (0151-5770)					
	Poorly Stocked	Medium Stocked	Well Stocked			TOTAL
	Acres					
Seeding - D	100	2500	3000			5600
Saplings - D	50	500	4000			4550
Poles - D	25	300	7500			7825
Small Sawtimber-D	75	3200	3400			6675
Medium Sawtimber-D		2700	3700			6400
Large Sawtimber - D		1400	1200			2600
TOTAL	250	10600	22800			33650

FR-65

(2 of 7) FO-4

State _____ (0100-0004) District _____ (0100-0543) RA _____ (0100-0418) P.U. _____ (0100-1075)

Productive Forest Land Area (Acres) by Stand Age (0151-5813) and Site Class (0151-5751)

(0151-5813) Stand Age	Site Class (0151-5751)									
	I	II	III	IV	V	VI	VII			TOTAL
	Acres									
0-9	100	300	400	600	500	200	100			2200
10-19	0	80	750	175	575	80	70			1730
20-29	20	500	50	10	90	50	80			800
30-39										
40-49										
50-59										
60-69										
70-79										
80-89										
90-99										
Unclassified										
TOTAL	120	880	1200	785	1165	330	250			4730

FR-66

(3 of 7) FO-4

State (011-0004) District (0100-0543) RA (0100-0418) P.U. (0100-1075)

Productive Forest Land Area (Acres) by Age Class (0151-5813) and Stand Size Class (0151-5810)

(0151-5813) Age Class	Stand Size Class (0151-5810) & Stand Size Class Type (0151-5875)						
	SEEDLINGS D	SAPLINGS D	POLES D	SMALL SAWTIMBER D	MEDIUM SAWTIMBER D	LARGE SAWTIMBER D	TOTAL
	ACRES						
0-9	550	625	0	0	0	0	1175
10-19	10	700	0	0	0	0	710
20-29	0	800	250	0	0	0	1050
30-39	0	0	300	50	0	0	350
40-49	0	0	325	60	0	0	385
50-59	0	0	400	250	0	0	650
60-69	0	0	250	420	0	0	670
70-79	0	0	150	650	20	0	820
80-89	0	0	50	700	200	0	950
90-99	0	0	0	680	350	0	1030
100-109	0	0	0	620	400	10	1030
110-1190	0	0	450	400	200	1050	2100
TOTAL	560	2125	2175	3830	1170	1060	10920

FS-67

(4 of 7) FO-4

State (0100-0004) | District (0100-0543) | RA (0100-0418) | P.U. (0100-1075)

Productive Forest Land Area (Acres) by Type (0132-2706) and Stand Size Class (0151-5810)

Vegetative Sub Type (0132-2706)	Stand Size Class (0151-5810) & Stand Size Class Type (0151-5875)									
	Non-Stocked D	Seedlings D	Saplings D	Poles D	Small Sawtimber D	Medium Sawtimber D	Large Sawtimber D			Sawtimber Total
	Acres									
Douglas Fir (6001)	200	250	300	350	300	350	250			2000
Ponderosa Pine (6011)	100	175	250	300	225	325	300			1675
Engelmann Spruce (6035)	50	200	175	400	375	300	225			1725
TOTAL	350	625	725	1050	900	975	775			5400

FR-68

(5 of 7) FO-4

State _____ (0100-0004) District _____ (0100-0543) RA _____ (0100-0418) P.U. _____ (0100-1075)

Productive Forest Land Area (Acres) by Type (0132-2706) and Site Class (0151-5751)

(0151-5766) Type / Site Class Type (0151-5926)	Site Class (0151-5751)									
	I	II	III	IV	V	VI	VII			TOTAL
	Acres									
Douglas Fir (6001) A	250	350	300	350	300	250	200			2000
Ponderosa Pine (6011) C	300	325	225	300	250	175	100			1675
Engelmann Spruce (6035)	325	300	375	400	175	200	50			1825
TOTAL	875	975	900	1050	725	625	350			5500

State _____ District _____ RA _____ P.U. _____

Productive Forest Land Area (Acres) by Type (0132-2706) and Age Class (0151-5813)

Vegetative Sub Type (0132-2706)	AGE CLASS (0151-5813)														
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119			TOTAL
	ACRES														
Douglas Fir (6001)	1000	250	300	50	100	300	325	275	400	375	250	275			3900
Ponderosa Pine (6011)	500	125	150	75	50	175	150	200	150	175	150	125			2025
Engelmann Spruce (6035)	100	50	50	25	50	75	150	25	100	125	200	175			1125
TOTAL	1600	425	500	150	200	550	625	500	650	675	600	575			7050

FO-4 (7 of 7)

FO-4

Prog. Area: 0151
Prep. By: Hayes
Date: 27 July 77

FO-5

OUTPUT DESCRIPTION

OUTPUT TITLE: Acreage by Resource Area and Land Use

OUTPUT FORM: Printout/CRT Display

OUTPUT DESCRIPTION: Two-dimensional table showing acres by resource area and land use.

USER(s): Foresters; Planners; Managers.

LOCATION(s): Resource Area; DOs; SOs.

USAGE: URA, Planning; permanent reference, analytical reference and reports to outside agencies.

ACCESS LIMITATIONS: None

RESPONSE TIMES: DESIRED: REQUIRED:

See Response Times - General

FREQUENCY OF PRODUCTION: Once every ten years per district. Approximately 30 districts have forestry information requiring this output.

DEPENDENCIES: None

REQUEST PARAMETERS: State (0100-0004); District (0100-0543); Resource Area (0100-0418); Planning Unit (0100-1075); Land Use (151-6111); Master Unit (0100-5891); County (0100-0546).

OUTPUT TITLE: Acreage by Resource Area and Land Use

SORT ORDER: Same as Request Parameters.

ESTIMATED VOLUME: Two pages per request.

COMPUTATIONS/PROCESSES: Computation and processing by FINSYS program, L283.

ACCURACY: Nearest Acre.

SCALE: NA

ANNOTATIONS: NA

LEGEND: NA

REMARKS: Additional tables of the same format and also produced by FINSYS. They contain the variance and standard error of the statistics shown in FO-4.

State _____ (0100-0004) District _____ (0100-0543) RA _____ P.U. _____

Area (Acres) by Resource Area (0151-0418) and Land Use (0151-6111)

(0100-0418) Resource Area	Forest Land Classification (Strata) (0151-6111)					TOTAL
	Commercial Forest	Non-Stocked Commercial	Non-Commercial Forest	Non-Forest		
	Acres					
Royal Gorge	150000	20000	50000	300000		520000
San Luis	80000	5000	5000	250000		340000
Northeast	20000	1000	2000	50000		73000
TOTAL	250000	26000	57000	600000		933000

Prog. Area: 0151
Prep. By: Hayes
Date: 27 July 77

FO-6

OUTPUT DESCRIPTION
Page 1 of 2

OUTPUT TITLE: Productive Forest Land Annual Growing Stock Net Growth

OUTPUT FORM: Printout/CRT Display.

OUTPUT DESCRIPTION: Two-dimensional tables giving net growth by various parameters.

USER(s): Foresters; Managers; Planners

LOCATION(s): Resource Area; DOs; SOs.

USAGE: URA, planning permanent reference, analytical reference, and reports to outside agencies.

ACCESS LIMITATIONS: None.

RESPONSE TIMES: DESIRED: REQUIRED:

See Response Time - General

FREQUENCY OF PRODUCTION: Once every ten years per district requiring forestry information (approximately 30 districts).

DEPENDENCIES: None.

REQUEST PARAMETERS: State (0100-0004); District (0100-0543); Resource Area (0100-0418); Planning Unit (0100-1075); Forest Type (151-5766); Stocking Class (151-5770); Stand Size Class (151-5810); Age Class (151-5813); Site Class (151-5751); Diameter Class (151-6157); Species (151-6100); Master Unit (0100-5891); County (0100-0546).

OUTPUT TITLE: Productive Forest Land Annual Growing Stock Net Growth

SORT ORDER: Same as Request Parameters.

ESTIMATED VOLUME: 5 pages per table, up to 10 tables per request.

COMPUTATIONS/PROCESSES: Computation and processing to be accomplished by FINSYS program, L283.

ACCURACY: ±5%

SCALE: NA

ANNOTATIONS: NA

LEGEND: NA

REMARKS: Each table may be requested by cubic foot, board foot international, or board foot Scribner. Additional tables of the same format are also produced by FINSYS. They enter the variances and standard errors associated with the statistics shown in FO-5.

State _____ (0100-0004) District _____ (0100-0543) RA _____ (0100-0418) P.U. _____ (0100-1075)

Productive Forest Land Annual GS Net Growth (CF) by Type (0132-2706) and Site Class (0151-5766)

Vegetative Sub Type (0132-2706) Site Class Type (0151-5926)	Site Class (0151-5751)									
	I	II	III	IV	V	VI	VII			TOTAL
	Thousand Cubic Feet									
Douglas Fir (6001) A	230	200	160	110	80	40	15			835
Ponderosa Pine (6001) C	225	180	130	90	50	25	10			710
Englemann Sp. (6035) G	240	170	130	95	65	25	10			735
TOTAL	695	550	420	295	195	90	35			2280

State _____ District _____ RA _____ P.U. _____

(0100-0004) (0100-0543) (0100-0418) (0100-1075)

Productive Forest Land GS Net Annual Growth (BFI) by Type (0132-2706) and Site Class (0151-5766)

Vegetative Sub Type (0132-2706)	Site Class (0151-5751) and Site Class Type (0151-5926)									
	I-A	II-A	III-A	IV-A	V-A	VI-A	VII-A			TOTAL
	MBF International (0151-5872)									
Douglas Fir (6001)	1400	1400	1600	1000	1600	1400	1000			9400
TOTAL										

State _____ (0100-0004) District _____ (0100-0543) RA _____ (0100-0418) P.U. _____ (0100-1075)

Productive Forest Land GS Net Annual Growth (BFS) by Type and Site Class

Vegetative Sub Type	Site Class (0151-5751) and Site Class Type (0151-5926)									
	I-A	II-A	III-A	IV-A	V-A	VI-A	VII-A			TOTAL
	Board Foot -Scribner (0151-5872)									
Douglas Fir (6001)	1200	1200	1400	1400	1200	1200	1000			8600
TOTAL										

Prog. Area: 0151
Prep. By: Hayes
Date: 27 July 77

FO-7

OUTPUT DESCRIPTION
Page 1 of 2

OUTPUT TITLE: Productive Forest Land: Number of trees.

OUTPUT FORM: Printout/CRT Display.

OUTPUT DESCRIPTION: Two-dimensional table giving numbers of trees by parameters indicated.

USER(s): Foresters; Planners; Managers.

LOCATION(s): Resource Area; DOs; SOs.

USAGE: URA, Planning, permanent reference, analytical reference and reports to outside agencies.

ACCESS LIMITATIONS: None.

RESPONSE TIMES: DESIRED: REQUIRED:

See Response Time - General

FREQUENCY OF PRODUCTION: Once every ten years per district with significant forest acreages.

DEPENDENCIES: None.

REQUEST PARAMETERS: State (0100-0004); District (0100-0543); Resource Area (0100-0418); Planning Unit (0100-1075); Forest Type (151-5766); Stand Size Class (151-5810); Diameter Class (151-6157); Master Unit (0100-5891); County (0100-0546).

OUTPUT DESCRIPTION

OUTPUT TITLE: Productive Forest Land: Number of trees.

SORT ORDER: Same as request parameters.

ESTIMATED VOLUME: 4 pages per table, 2 tables per request.

COMPUTATIONS/PROCESSES: Computation and processing to be accomplished by FINSYS Program (L283).

ACCURACY: NA

SCALE: NA

ANNOTATIONS: NA

LEGEND: NA

REMARKS: Additional tables of the same format are produced by FINSYS. They show the variance and standard error of the statistics.

FO-8

Table 21.--Annual mortality of sawtimber on commercial timberland by species and diameter class 19__

State _____ (0100-0690) County _____ (0100-0546)

(0151-6100) Species	Diameter class (inches at breast height) (0151-6157)											
	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+	All classes
1/	BOARD FEET INTERNATIONAL 1/4-INCH RULE											
Douglas fir (01)	1000	2000	3000	4000	4000	4000	4000	5000	5000	6000	8000	42000
TOTAL, ALL SPECIES												

1/ Standard list of species.

FR-102

Table 20. Annual Mortality of Growing Stock Trees on Commercial Timberland by Forest Type and Diameter Class

State Colorado (0100-0690)

County Jefferson (0100-0546)

(0151-6100) Species	Diameter class (inches at breast height) (0151-6157)															
	1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.0	23.0-24.9	25.0-26.9	27.0-28.9	29.0+	Tota
1/	Cubic Feet															
Douglas fir			1000	1000	2000	2000	3000	3000	4000	4000	4000	4000	5000	5000		38000
TOTAL, ALL SPECIES																

1/ Standard list of species.

FR-101

8-21

Table 19.--Annual mortality of growing stock and sawtimber on commercial timberland by cause of mortality 19___

State (0100-0690) County (0100-0546)

(0100-6124) Cause of death	(0151-6100) All Species 1/												
GROWING STOCK (Thousand cubic feet) (0151-6144)													
Insects	100												
Disease	200												
Fire	100												
Animal	10												
Weather	10												
Suppression	300												
Unknown	100												
Other	0												
ALL CAUSES	820												
SAWTIMBER (Thousand board-feet International 1/4-inch rule)													
Insects	200												
Disease	1400												
Fire	700												
Animal	70												
Weather	70												
Suppression	2100												
Unknown	700												
Other	0												
ALL CAUSES	5740												

FR-100

FO-8

1/ Standard list of species.

2/ Equal to or greater than 9" DBH for softwoods
Equal to or greater than 13" DBH for hardwoods

FD-8

Table 18.--Net annual growth of sawtimber on commercial timberland by species and diameter class 1/

State _____ (0100-0690) County _____ (0100-0546)

(0151-6100) Species	Diameter class (inches at breast height) (0151-6157)											
	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0-30.9	Total
1/	Board Feet International 1/4 inch rule											
Douglas fir	200	200	300	300	400	500	500	400	300	200	200	3400
TOTAL, ALL SPECIES												

1/ Standard list of species.

FR-99

Table 17. Net Annual Growth of Growing Stock Trees on Commercial Timberland by Forest Type, Site Class, and Diameter Class. 19 ____

State Colorado (0100-0690)

County Jefferson (0100-0546)

Vegetative Sub Type (0132-2706) Site Class (0151-5751) and Site Class Type (0151-5926)	Diameter Class (Inches at Breast Height) (0151-6157)														
	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+		All Classes
	Cubic Feet														
Douglas Fir (6001)															
165+ (B)															
120-164 (B)															
85-119 (B)															
50-84 (B)															
20-49 (B)															
TOTAL, ALL TYPES															

Table 16. Net Volume of Timber on Commercial Timberland by Class of Timber and Species 19____

State Colorado (0100-0690) County Jefferson (0100-9546)

Class of timber (0151-5410)	(0151-6100) All species	Douglas fir
	Thousand cubic	feet
Sawtimber trees:		
Saw log portion	200	50
Upper stem portion	100	25
Total	300	75
Poletimber trees:	100	25
Total of all growing stock trees	400	100
Sound cull trees:		
Sawtimber trees	50	25
Poletimber trees	25	10
Total	75	35
Rotten cull trees		
Sawtimber trees	25	15
Poletimber trees	10	5
Total	35	20
Salvable dead trees:		
Sawtimber trees	25	15
Poletimber trees	10	5
Total	35	20
TOTAL, ALL TIMBER		

Table 15. Net Volume of Growing Stock Trees on Commercial Timberland
by Forest Type (0151-5766), Site Class (0151-5751), and Diameter Class (0151-6157)

State Colorado (0100-0690)

County Jefferson (0100-0546)

(0151-5766) Forest Type and Site Class (0151-5751)	Diameter Class (Inches at Breast Height) (0151-6157)														
	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+		All Classes
	Thousand Cubic Feet														
1/ Douglas Fir (01)	100	100	200	200	200	300	300	400	400	500	500	500	400		3800
165+															
120-164															
85-119															
50-84															
20-49															
All Classes															

1/ Standard list of Forest Types

Table 14. Basal Area of Growing Stock Trees on Commercial Timberland by Forest Type (0132-2706), Site Class (0151-5761), and Diameter Class (0151-6157)

State Colorado (0100-0690) County Jefferson (0100-0546)

Vegetative Sub Type (0132-2706), Site Class (0151-5751), & Site Class Type (0151-5926)	Diameter Class (inches at breast height) (0151-6157)														
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0-30.9	Total
	----------Thousand Trees----------														
1/															
Douglas fir		2,000	3,000	3,000	2,000	2,000	1,000	1,000	1,000	900	900	500	500	500	18,300
165+ (B)															
120-164(B)															
85-119(B)															
50-84 (B)															
20-49 (B)															
TOTAL															

1/ Standard list of forest types.

Table 13. Number of Growing Stock Trees on Commercial Timberland
by Forest Type (0132-2607), Site Class (0151-5751), and Diameter Class (0151-6157)

State Colorado (0100-0690)

County Jefferson (0100-0546)

Vegetative Sub Type (0132-2607) Site Class (0151-5751) and Site Class Type (0151-5926)	Diameter Class (Inches at Breast Height) (0151-6157)													
	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0-30.9	Total
	Thousand Trees													
1/ Douglas Fir 165+ (B) 120-164 (B) 85-119 (B) 50-84 (B) 20-49 (B)	2000	3000	3000	2000	2000	1000	1000	1000	900	900	500	500	500	18300
TOTAL														

1/ Standard list of Forest Types

Table 11. Net Annual Growth and Annual Mortality of Growing Stock and Sawtimber on Commercial Timberland by Softwoods and Hardwoods 19 ___

State _____ (0100-0690)

County _____ (0100-0546)

	Growing Stock (0151-6144) Thousand Cubic Feet	Sawtimber 2/ Thousand Board Feet 1/
(0151-5796) Net Annual Growth		
Softwoods	2000	14000
Hardwoods	400	2800
TOTAL	2400	16800
Annual Mortality (0151-5849)		
Softwoods	20	1400
Hardwoods	4	280
TOTAL	24	1680

1/ International 1/4-inch rule.

2/ Sawtimber
Equal to or greater than 9" DBH for softwoods
Equal to or greater than 13" DBH for hardwoods

Table 10. Net Volume of Sawtimber on Commercial Timberland
by Species (0151-6100) and Diameter Class (0151-6157) 19___

State _____ County _____
(0100-0690) (0100-0546)

(0151-6100) Species	Diameter Class (0151-6157)														
	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+				All Classes
	Thousand Board Feet International 1/4-inch rule														
1/ Douglas Fir (01)	1400	2100	2100	2800	2800	3500	2800	2800	2100	2100	2100				26600
TOTAL, All Species															

1/ Standard list of species.

Table 9. Net Volume of Growing Stock on Commercial Timberland by Species (0151-6100) and Diameter Class 19_____

State Colorado (0100-0690) County Jefferson (0100-0546)

(0151-6100) Species	Diameter class (inches at breast height) (0151-6157)													Tot
			5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.0	23.0-24.9	25.0-26.9	27.0-28.9	29.0+	
1/	Thousand cubic feet															
Douglas fir			100	200	200	300	300	400	400	500	400	400	300	300	300	4100
TOTAL, All Species																

1/ Standard list of species.

FR-61

FO-8

Table 8. Net Volume of Growing Stock and Sawtimber on Commercial Timberland by Forest Type (0151-5766), Site Class (0132-2706), and Softwoods and Hardwoods 19_____

State _____ (0100-0690) County _____ (0151-0546)

Vegetative Subtype (0132-2706) by Site Class (0151-5751) and Site Class Type (0151-5926)	Growing Stock (Thousands cubic feet)			Sawtimber 1/ (Thousand bd. ft.)		
	All Species	Softwood	Hardwood	All Species	Softwood	Hardwood
2/ Douglas fir (6001)	200	150	50	150	90	60
165+ (B)						
120-164 (B)						
85-119 (B)						
50-84 (B)						
20-49 (B)						
TOTAL All Types						

1/ International 1/4-inch rule.
2/ Standard list of forest type.

FR-90

FO-8

Table 7. Volume of Wood on Commercial Timberland by Forest Type (0132-2706) and Tree and/or Material Class 19 _____

State _____ (0100-0690) County _____ (0100-0546)

Vegetative Sub-Type (0132-2706)	Total Vol. all Classes	Live, Noncull Tree			Cull Trees					
		Total 1/	Total 2/	Merchantable 3/	Sound	Rotten	Sound	Unsound		
	Thousand Cubic Feet									
4/										
Douglas fir	250	175	100	75	35	20	15	5		
.										
.										
.										
.										
ALL FOREST TYPES										

1/ Total tree volume in all live noncull trees 1.0-inch d.b.h. and larger.
2/ Total tree volume.
3/ Total from 1-foot stump to 4-inch top diameter.
4/ Standard list of forest types.

Table 6. Number of Live Trees on Commercial Timberland by Species (0151-6100) and Diameter Class (0151-6157) 19____

State Colorado (0100-0690) County Jefferson (0100-0546)

Species (0151-6100)	Diameter Class (Inches at Breast Height) (0151-6157)															
	1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0-30.9	Total
1/	Thousand Trees															
Douglas fir 165+ (B) 120-164 (B) 85-119 (B) 50-84 (B) 20-49 (B)	100	200	200	300	300	400	400	500	500	400	400	300	300	200	200	4800
Total, All Species																

1/ Standard list of species.

Table 5. Number of Growing Stock Trees on Commercial Timberland
by Species (0151-6100), Site Class (0151-5751) and Diameter Class (0151-6157)

State Colorado (0100-0690) County Jefferson (0100-0546)

Species (0151-6100) Site Class (0151-5751) Site Class Type (0151-5926)	Diameter Class (Inches at Breast Height) (0151-6157)													
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0-30.9	Total
1/	Thousand Trees													
Douglas fir		200	300	300	400	400	500	500	400	400	300	300	200	300	4800
165+ (B)															
120-164 (B)															
85-119 (B)															
50-84 (B)															
20-49 (B)															
Total, All Species															

1/ Standard list of species.

Table 4. Area of Commercial Timberland by Stand Volume Class
(0151-5790) 19____

State _____ (0100-0690) County _____ (0100-0546)

(0151-5790) Stand volume per acre (cubic feet)	Acres
Less than 500 cu. ft.	100
500 to 1,499 cu. ft.	500
1,500 to 2,499 cu. ft.	700
2,500 to 3,499 cu. ft.	1,000
3,500 to 4,999 cu. ft.	1,400
Over 5,000 cu. ft.	900
ALL CLASSES	10,900

(0151-5790) Stand volume per acre (board feet) 1/	Acres
Less than 1,500 bd. ft.	
1,500 to 4,999 bd. ft.	
5,000 to 9,999 bd. ft.	
10,000 to 19,999 bd. ft.	
More than 20,000 bd. ft.	
ALL CLASSES	

1/ International 1/4-inch rule.

Table 3. Area of Commercial Timberland by Forest Type (0151-5766), Stand-size Class(0151-5810), and Site Class (0151-5751) 19 _____

State _____ (0100-0690) County _____ (0100-0546)

(0151-5766) Forest Type Stand - Size Class (0151-5810) & Stand Size Class Type	Site Class (0151-5751) and Site Class Type (0151-5926)						
	165+ (B)	120-164(B)	85-119 (B)	50-84 (B)	20-49 (B)	Total	
	Acres (0100-6520)						
(0151-5875) 1/							
Douglas fir (6001)	500	700	10000	2000	1000	14200	
Sawtimber - D							
Poletimber - D							
Sapling and Seeding - D							
Non-stocked-D							
TOTAL							

1/ Standard list of forest types.

FR-85

FO-8

Table 1. Area by Major Land Class (0151-6101) 19_____

State Colorado (0100-0690) County Jefferson (0100-0546)

Major Land Class (0151-6101)		Acres
Land		
1.	Range land	9,000
2.	Forest land (except forested wetland)	100,000
3.	Wetland	UNK
	a. Forested	
	b. Nonforested	
4.	Barren land	UNK
5.	Tundra	--0--
6.	Perennial snow or ice	--0--
7a.	Noncensus water	UNK
	TOTAL LAND AREA	111,000
7b.	Census water	--0--
	GROSS AREA	111,000
	TOTAL FOREST LAND (2 + 3a)	100,000

OUTPUT TITLE: County Summaries for Resources Planning Act (RPA), USFS.

SORT ORDER: Same as Request Parameters.

ESTIMATED VOLUME: 22 tables for each county in the 11 western states and Alaska (22100 tables).
COMPUTATIONS/PROCESSES: Computation and processing to be accomplished by FINSYS Program (L283).

ACCURACY: NA

SCALE: NA

ANNOTATIONS: NA

LEGEND: NA

REMARKS: Additional tables of the same format and produced upon request. These show the variance and standard error of the statistics.

Prog. Area: 0151
Prep. By: Hayes
Date: 17 August 77

FO-8

OUTPUT DESCRIPTION
Page 1 of 2

OUTPUT TITLE: County Summaries for Resources Planning Act (RPA), USFS.

OUTPUT FORM: Printout.

OUTPUT DESCRIPTION: Two-dimensional arrays giving summaries of Forest statistics by county.

USER(s): USFS

LOCATION(s): Intermountain Forest and Range Experiment Station, Ogden, Utah.

USAGE: Input to USFS, Plan for Regional Assessment.

ACCESS LIMITATIONS: None.

RESPONSE TIMES: DESIRED: REQUIRED:

See Response Time - General

FREQUENCY OF PRODUCTION: 10 year intervals. Probably production will be limited to 30 districts with significant forest acreages and perhaps 5 state offices.

DEPENDENCIES: None.

REQUEST PARAMETERS: State (100-0690); County, etc. (0100-0546); Resource Area (100-0418); Stand Size Class (0151-5810); Diameter Class (151-6157); Land Use (151-6101); Restrictions (151-6106); Site Class (151-5751); Stand Volume Class (151-5908); Cause of Death (151-6124); Forest Type, Existing Stand (0151-5766); Congressional District (0100-0547); Master Unit (0100-5891); County (0100-0546).

State 05 (0100-0004) District 05 (0100-0543) RA 05 (0100-0418) P.U. 05 (0100-1075)

Number of Growing Stock Trees by Type (0132-2706) and Stand Size Class (0151-5810)

Vegetative Sub Type (0132-2706)	Stand Size Class (0151-5810) and Stand Size Class Type (0151-5875)					
	Saplings D	Poles D	Small Sawtimber D	Medium Sawtimber D	Large Sawtimber D	TOTAL
	(Thousands)					
Douglas Fir (01)	750	675	425	385	290	2525
Ponderosa Pine (11)	800	725	500	350	300	2675
Engelmann Spruce (35)	650	500	450	400	325	2325
TOTAL	2200	1900	1375	1135	915	7525

FR-81

FO-7

Table 22. Management Situation on Commercial Timberland by Forest Type and Site Class 19 ___

State (0100-0690) County (0100-0546) RA _____ P.U. _____

Vegetative Sub Type (0132-2706) Site Class (0151-5751) Site Class Type (0151-5926)	Average Site (0151-5751)	Current Net Annual Growth Per Acre	Total Area	Area Stockable	Area Stocked with Growing Stock	Area Stocked with growing cull tree	Basal Area of average tree at Age 50
		Cubic Feet	Acres				Square Feet
Ponderosa Pine							
1A-C							
01-C							
02-C							
03-C							
04-C							
05-C							
06-C							
07-C							

FR-103

FO-8

Prog. Area: Forestry
Prep. By: Horak
Date: 26 August 77

FO-9

OUTPUT DESCRIPTION
Page 1 of 2

OUTPUT TITLE: L264, SIMMIX Edit Listing

OUTPUT FORM: ADP Printout.

OUTPUT DESCRIPTION: The printout consists of approx. 30 pages of coded data. Due to the volume of the instructions which must accompany the sample edit listing to make it readable, no output sample is included here. For more detailed information, call Fran Horak, DSC, 234-2317.

USER(s): DSC & OSO; Allowable cut specialists.

LOCATION(s): Denver Service Center
Oregon State Office

USAGE: This program is required to properly format and test the forest simulation model input for proper operation.

ACCESS LIMITATIONS: Limited to allowable cut specialists.

RESPONSE TIMES: DESIRED: REQUIRED:

See Response Times - General

FREQUENCY OF PRODUCTION: One printout is required for each set of forest simulation model inputs.

DEPENDENCIES: Input data is dependent upon forest inventory data base. Biological projections of timber growth and yields--managements classifications and plans and--economic analysis of forestry program plans.

REQUEST PARAMETERS: NA

OUTPUT TITLE: L264, SIMMIX Edit Listing

SORT ORDER: NA

ESTIMATED VOLUME: Approx. 150 edits are made during the allowable cut completion phase which occurs every 10 years and lasts for 3-4 years. This occurs for 17 sustained yield units and for the 12 western Oregon Master Units.

COMPUTATIONS/PROCESSES:

ACCURACY: NA

SCALE: NA

ANNOTATIONS: NA

LEGEND: NA

REMARKS: The L264 program edits the SIMMIX input data; the program and printout consists of 3 parts:

Part 1: is a complete listing of the input data as key punched.

Part 2: is a realignment of the input data according to the fixed 490 card format. All card columns must either have pertinent data or are automatically zero filled.

Part 3: is the growth and yield equation analysis section. The mathematical computations show the x and y coordinate intercepts and peak values for each of the possible 76 second degree regression equations.

Prog. Area: Forestry
Prep. By: Horak
Date: 22 August 77

FO-10

OUTPUT DESCRIPTION
Page 1 of 2

Attached is a sample printout of an MFP-2 Level Allowable Cut of the former Dillon District. It includes multiple use restrictions and intensive management practices.

OUTPUT TITLE: L265 PRODOCF Allowable Cut

OUTPUT FORM: ADP Printout; Length, up to 350 pages.

OUTPUT DESCRIPTION: See "Remarks" below

USER(s): Foresters & Managers, Washington; DSC; SO; Districts.

LOCATION(s): Self Explanators.

USAGE: Use as inputs into URA-3, URA-4, EARs, MFP-2, 3, ESs, program package and complete activity plans.

ACCESS LIMITATIONS: Program inputs and updates should be limited to the allowable cut specialists.

RESPONSE TIMES: DESIRED: REQUIRED:
Requires 3 to 6 weeks to prepare all inputs into a simulation model; minor update of model input requires 1 to 3 days.

FREQUENCY OF PRODUCTION: Allowable cut alternatives are normally computed every 10 years in conjunction with reinventory of forest lands. Recomputations are also made when catastrophic losses occur or major policy decisions result in changes in basic resource data. Made for 17 sustained yield units and 12 Western Oregon Master Units.

DEPENDENCIES:

REQUEST PARAMETERS: Forest inventory and allowable cut base acreage may be at a state, district, resource or portion of a resource area. Master Unit (0100-5891); County (0100-0546); State (0100-0004); District (0100-0543); Resource Area (0100-0418).

Fo-10

OUTPUT DESCRIPTION

OUTPUT TITLE: L255 PRODOCF Allowable Cut

SORT ORDER: Develop batch listing from all or portion of the 23 page set of input forms.

ESTIMATED VOLUME:---------- Four to 18 preliminary alternative forest models are developed for each sustained yield unit.

COMPUTATIONS/PROCESSES: Four final alternatives are prepared as final input into the district URA-3, URA-4, MFP-2, MFP-3 and district final management plan. The computation process requires development of numerous separate silvicultural, statistical, and managerial studies.

ACCURACY: NA

SCALE: NA

ANNOTATIONS: NA

LEGEND: NA

REMARKS: SIMMIX is a computerized forest simulation model that calculates the maximum sustainable allowable cut that is associated with a given set of basic resource data and a detailed forest management plan for manipulation of even age stands. A harvest rate is computed, based on present inventory data and projected growing stock, volume and growth for nearly any level of proposed management practices. This projection of biological response and forest managerial actions can be carried forward for up to 400 years on a decadal basis. The cutting level becomes a public commitment upon administrative action or announcement by the Sec. of the Interior.

FO-10

PAGE 1

WITH INTER. CLEAR CUT 197X

* * * ALLOWABLE CUT COMPUTATIONS * * *

* * EVENFLOW * *

YEAR 1977 — INITIAL TEST LEVEL

AGE CLASS	TREATMENT CLASS	ACRES	TOTAL VOL M FT.	AVE ANNUAL GROWTH FT.	VOLUME CUT M FT. COMM. THINNING	MORTALITY SALVAGE	FINAL HARVEST	ACRES HARVESTED P.COMM ONLY	P. COMM. THINNING	COMM. THINNING	MORTALITY SALVAGE	FINAL HARVEST
N/S	NON-TREATED	2210										
30	NON-TREATED	970	1951.	93165.	0.	0.	0.	0	0	0	0	0
40	NON-TREATED	960	2827.	85086.	0.	0.	0.	0	0	0	0	0
60	NON-TREATED	984	4470.	71536.	0.	0.	0.	0	0	0	0	0
90	NON-TREATED	1958	12453.	96438.	0.	0.	0.	0	0	0	0	0
100	NON-TREATED	2930	20005.	121799.	0.	0.	0.	0	0	0	0	0
110	NON-TREATED	4868	35071.	164476.	0.	0.	0.	0	0	0	0	0
120	NON-TREATED	2917	21888.	75856.	0.	0.	0.	0	0	0	0	0
130	NON-TREATED	1957	15117.	35661.	0.	0.	0.	0	0	0	0	0
150	NON-TREATED	984	7806.	2619.	0.	0.	0.	0	0	0	0	0
160	NON-TREATED	978	7747.	-5012.	0.	0.	0.	0	0	0	0	0
INITIAL LEVEL		21716	129335.	791614.								

FR-108

WITH INTEN — INITIAL PARTIAL CUT — 1977

* * * ALLOWABLE CUT COMPUTATIONS * * *

* * EVENFLOW * *

AGE CLASS	TREATMENT CLASS	ACRES	YEAR 1977 TOTAL VOL M FT.	YEAR 1977 AVE ANNUAL GROWTH FT.	INITIAL TEST LEVEL VOLUME CUT M FT. COMM. THINNING	MORTALITY SALVAGE	FINAL HARVEST	ACRES P.COMM ONLY	P. COMM. THINNING	HARVESTED COMM. THINNING	MORTALITY SALVAGE	FINAL HARVEST
N/S	NON-TREATED	1993										
10	NON-TREATED	2004										
30	NON-TREATED	997	4512.	105989.	0.	0.	0.	0	0	0	0	0
40	NON-TREATED	938	6129.	89201.	0.	0.	0.	0	0	0	0	0
70	NON-TREATED	1961	14626.	175984.	0.	0.	0.	0	0	0	0	0
80	NON-TREATED	7057	59862.	596362.	0.	0.	0.	0	0	0	0	0
90	NON-TREATED	3833	35661.	309145.	0.	0.	0.	0	0	0	0	0
100	NON-TREATED	2933	29065.	216094.	0.	0.	0.	0	0	0	0	0
110	NON-TREATED	3983	41236.	265294.	0.	0.	0.	0	0	0	0	0
120	NON-TREATED	2932	33062.	184819.	0.	0.	0.	0	0	0	0	0
130	NON-TREATED	5988	69999.	339219.	0.	0.	0.	0	0	0	0	0
140	NON-TREATED	1962	24385.	102528.	0.	0.	0.	0	0	0	0	0
150	NON-TREATED	1954	25254.	91446.	0.	0.	0.	0	0	0	0	0
170	NON-TREATED	978	13453.	35394.	0.	0.	0.	0	0	0	0	0
180	NON-TREATED	1942	27353.	59985.	0.	0.	0.	0	0	0	0	0
190	NON-TREATED	970	13941.	24717.	0.	0.	0.	0	0	0	0	0
200	NON-TREATED	984	14366.	19805.	0.	0.	0.	0	0	0	0	0
210	NON-TREATED	978	14949.	10947.	0.	0.	0.	0	0	0	0	0
250	NON-TREATED	978	19608.	-6502.	0.	0.	0.	0	0	0	0	0
INITIAL LEVEL		46141	440915.	2622326.								

FR-109

WITH INTEN — INTERMEDIATE PARTIAL CUT — 1977

* * * ALLOWABLE CUT COMPUTATIONS * * *

YEAR 1977 — * * EVENFLOW * *

AGE CLASS	TREATMENT CLASS	ACRES	TOTAL VOL M FT.	AVE ANNUAL GROWTH FT.	INITIAL TEST LEVEL — VOLUME CUT M FT. COMM. THINNING	MORTALITY SALVAGE	FINAL HARVEST	ACRES HARVESTED P.COMM ONLY	P. COMM. THINNING	COMM. THINNING	MORTALITY SALVAGE	FINAL HARVEST
80	NON-TREATED	1961	7677.	77777.	0.	0.	0.	0	0	0	0	0
90	NON-TREATED	2892	12432.	107423.	0.	0.	0.	0	0	0	0	0
110	NON-TREATED	2930	14624.	94084.	0.	0.	0.	0	0	0	0	0
120	NON-TREATED	2912	15933.	86179.	0.	0.	0.	0	0	0	0	0
130	NON-TREATED	2940	15856.	76900.	0.	0.	0.	0	0	0	0	0
140	NON-TREATED	939	5479.	23038.	0.	0.	0.	0	0	0	0	0
150	NON-TREATED	1975	11997.	43537.	0.	0.	0.	0	0	0	0	0
160	NON-TREATED	978	6144.	19097.	0.	0.	0.	0	0	0	0	0
170	NON-TREATED	979	6323.	16536.	0.	0.	0.	0	0	0	0	0
190	NON-TREATED	1952	13185.	23378.	0.	0.	0.	0	0	0	0	0
230	NON-TREATED	1962	13463.	18560.	0.	0.	0.	0	0	0	0	0
300	NON-TREATED	964	6314.	15183.	0.	0.	0.	0	0	0	0	0
	INITIAL LEVEL	23282	128927.	571467.								

FR1110

* * * A L L O W A B L E C U T C O M P U T A T I O N S * * *

* * EVENFLOW * *

AGE CLASS	TREATMENT CLASS	ACRES	TOTAL VOL M FT.	AVE ANNUAL GROWTH FT.	VOLUME CUT M FT. COMM. THINNING	MORTALITY SALVAGE	FINAL HARVEST	ACRES HARVESTED P.COMM ONLY	P. COMM. THINNING	COMM. THINNING	MORTALITY SALVAGE	FINAL HARVEST
YEAR 1977					INITIAL TEST LEVEL							
80	NON-TREATED	997	2657.	26923.	0.	0.	0.	0	0	0	0	0
90	NON-TREATED	1975	5780.	49949.	0.	0.	0.	0	0	0	0	0
130	NON-TREATED	976	3710.	17993.	0.	0.	0.	0	0	0	0	0
140	NON-TREATED	1975	7855.	33026.	0.	0.	0.	0	0	0	0	0
180	NON-TREATED	979	4410.	9451.	0.	0.	0.	0	0	0	0	0
210	NON-TREATED	970	4586.	4585.	0.	0.	0.	0	0	0	0	0
INITIAL LEVEL		7871	28998.	142126.								

MAIN ITEM CLEAR CUT 1977

ALLOWABLE CUT COMPUTATIONS 96563. M. BD.FT. INT.1/8" DECADE CUT

* * EVENFLOW * *

1978 YEAR 1987					1978 - 1987 VOLUME CUT M FT.			ACRES HARVESTED			
AGE CLASS	TREATMENT CLASS	ACRES	TOTAL VOL M FT.	AVE ANNUAL GROWTH FT.	COMM. THINNING	MORTALITY SALVAGE	FINAL HARVEST	P.COMM ONLY	P. COMM. THINNING	COMM. THINNING	MORTALITY SALVAGE	FINAL HARVEST
N/S	NON-TREATED	2210										
30	C THIN 30-90	970	110.	157843.	0.	0.	0.	0	0	970	0	0
40	C THIN 40-90	964	362.	187590.	1899.	0.	0.	0	0	964	0	0
60	C THIN 60-90	984	1523.	196088.	0.	0.	0.	0	0	984	0	0
90	NON-TREATED	1954	13961.	99131.	0.	0.	0.	0	0	0	0	0
100	NON-TREATED	2930	21405.	110923.	0.	0.	0.	0	0	0	0	0
110	NON-TREATED	4868	37221.	145381.	0.	0.	0.	0	0	0	0	0
120	NON-TREATED	2917	23051.	32639.	0.	0.	0.	0	0	0	0	0
130	NON-TREATED	1957	15397.	2863.	0.	0.	0.	0	0	0	0	0
150	NON-TREATED	980	7794.	-5043.	0.	0.	0.	0	0	0	0	0
160	NON-TREATED	974	7659.	-12623.	0.	0.	0.	0	0	0	0	0
DECADE 1 TOTALS		21716	127989.	869092.	1899.	0.	0.	0	0	2918	0	0

ACRES CLEAR CUT 0. INGROWTH 0. PARTIAL CUT VOLUME 1899.

TOTAL ACREAGE 21716. AV GRWTH 869092. TOTAL DECADE VOLUME 1899.

FR-112

MEDIUM INTEN — INITIAL PARTIAL CUT — 1977

ALLOWABLE CUT COMPUTATIONS — 96563. M. BD.FT. INT.1/8" DECADE CUT

* * EVENFLOW * *

1978	YEAR 1987			1978 - 1987 VOLUME CUT M FT.				1978 - 1987 ACRES HARVESTED			
AGE CLASS	TREATMENT CLASS	ACRES	TOTAL VOL M FT.	AVE ANNUAL GROWTH FT.	COMM. THINNING	MORTALITY SALVAGE	FINAL HARVEST	P.COMM ONLY	P. COMM. THINNING	COMM. THINNING	MORTALITY SALVAGE	FINAL HARVEST
N/S	NON-TREATED	1993										
10	NON-TREATED	2904										
30	NON-TREATED	997	5019.	101652.	0.	0.	0.	0	0	0	0	0
50	NON-TREATED	938	6562.	88702.	0.	0.	0.	0	0	0	0	0
70	C THIN 70-90	1961	11723.	387885.	8266.	0.	0.	0	0	1961	0	0
90	NON-TREATED	1010	8905.	88767.	0.	0.	0.	0	0	0	0	0
90	C THIN 80-90	6057	43237.	1399495.	26681.	0.	0.	0	0	6057	0	0
	CLASS TOTAL	7067	52142.	1487962.	26681.	0.	0.	0	0	6057	0	0
90	NON-TREATED	2924	24281.	235998.	0.	0.	0.	0	0	0	0	0
90	C THIN 90	975	8469.	228715.	6645.	0.	0.	0	0	975	0	0
	CLASS TOTAL	3899	32750.	464713.	6645.	0.	0.	0	0	975	0	0
100	NON-TREATED	2933	30587.	213451.	0.	0.	0.	0	0	0	0	0
110	NON-TREATED	3983	43216.	260952.	0.	0.	0.	0	0	0	0	0
120	NON-TREATED	2932	34516.	190235.	0.	0.	0.	0	0	0	0	0
130	NON-TREATED	5999	73170.	339909.	0.	0.	0.	0	0	0	0	0
140	NON-TREATED	1962	25357.	92921.	0.	0.	0.	0	0	0	0	0
150	NON-TREATED	1954	26110.	81182.	0.	0.	0.	0	0	0	0	0
170	NON-TREATED	978	13780.	30158.	0.	0.	0.	0	0	0	0	0
190	NON-TREATED	701	10075.	17963.	0.	0.	9369.	0	0	0	0	1241
190	NON-TREATED	0	0.	0.	0.	0.	7451.	0	0	0	0	970
200	NON-TREATED	0	0.	0.	0.	0.	7663.	0	0	0	0	984
210	NON-TREATED	0	0.	0.	0.	0.	7693.	0	0	0	0	978
250	NON-TREATED	0	0.	0.	0.	0.	7722.	0	0	0	0	978

FR-113

MITH INTGN — INITIAL PARTIAL CUT — 1977

ALLOWABLE CUT COMPUTATIONS — 26563. M. BD.FT. INT.1/8" DECADE CUT

** EVENFLOW **

1978 ---------- YEAR 1987 ----------					VOLUME CUT M FT.			1978 - 1987 ACRES HARVESTED				
AGE CLASS	TREATMENT CLASS	ACRES	TOTAL VOL M FT.	AVE ANNUAL GROWTH FT.	COMM. THINNING	MORTALITY SALVAGE	FINAL HARVEST	P.COMM ONLY	P. COMM. THINNING	COMM. THINNING	MORTALITY SALVAGE	FINAL HARVEST
DECADE 1 TOTALS		80990	369024.	3757087.	81591.	0.	39897.	0	0	8993	0	5151

ACRES CLEAR CUT 5151 INGROWTH 0. PARTIAL CUT VOLUME 81591.

TOTAL ACREAGE 80990 AN GRWTH 3757087. TOTAL DECADE VOLUME 81489.

FR-114

ALLOWABLE CUT COMPUTATIONS — 96563. N. BD.FT. INT.1/8TH DECADE CUT

* * EVENFLOW * *

1978 ---------- YEAR 1987 ----------					VOLUME CUT M FT.			ACRES HARVESTED 1978 - 1987				
AGE CLASS	TREATMENT CLASS	ACRES	TOTAL VOL M FT.	AVE ANNUAL GROWTH FT.	COMM. THINNING	MORTALITY SALVAGE	FINAL HARVEST	P.COMM ONLY	P. COMM. THINNING	COMM. THINNING	MORTALITY SALVAGE	FINAL HARVEST
80	NON-TREATED	1961	8126.	80730.	0.	0.	0.	0	0	0	0	0
90	NON-TREATED	2492	13186.	109705.	0.	0.	0.	0	0	0	0	0
110	NON-TREATED	2930	15327.	92548.	0.	0.	0.	0	0	0	0	0
120	NON-TREATED	2912	16112.	88891.	0.	0.	0.	0	0	0	0	0
130	NON-TREATED	2940	16589.	77057.	0.	0.	0.	0	0	0	0	0
140	NON-TREATED	938	5698.	20577.	0.	0.	0.	0	0	0	0	0
150	NON-TREATED	1975	12907.	38566.	0.	0.	0.	0	0	0	0	0
160	NON-TREATED	978	6323.	16535.	0.	0.	0.	0	0	0	0	0
170	NON-TREATED	979	6977.	14174.	0.	0.	0.	0	0	0	0	0
180	NON-TREATED	1241	8343.	14963.	0.	0.	0.	0	0	0	0	0
190	NON-TREATED	970	6656.	9176.	0.	0.	8243.	0	0	0	0	1952
200	NON-TREATED	988	6833.	6832.	0.	0.	8328.	0	0	0	0	1962
210	NON-TREATED	978	6887.	4329.	0.	0.	0.	0	0	0	0	0
250	NON-TREATED	978	6823.	-5517.	0.	0.	0.	0	0	0	0	0
300	NON-TREATED	969	6150.	-17520.	0.	0.	0.	0	0	0	0	0
DECADE 1 TOTALS		24519	141897.	551004.	0.	0.	8568.	0	0	0	0	3914

ACRES CLEAR CUT 3914 INGROWTH 0. PARTIAL CUT VOLUME 0.

TOTAL ACREAGE 24519 AN GRWTH 551004. TOTAL DECADE VOLUME 8568.

FR-115

MITH INTEN — FINAL PARTIAL CUT — 1977 — 96563. M. BD.FT. INT.1/8" DECADE CUT

ALLOWABLE CUT COMPUTATIONS

▲ ▲ EVENFLOW ▲ ▲

1978 ---------- YEAR 1987 ----------				VOLUME CUT M FT.			1978 - 1987 ACRES HARVESTED				
AGE CLASS	TREATMENT CLASS	ACRES	TOTAL VOL M FT.	AVE ANNUAL GROWTH FT.	COMM. THINNING	MORTALITY SALVAGE	FINAL HARVEST	P.COMM ONLY	P. COMM. THINNING	COMM. THINNING	MORTALITY SALVAGE	FINAL HARVEST
80	NON-TREATED	997	2813.	27985.	0.	0.	0.	0	0	0	0	0
90	NON-TREATED	1975	6113.	51009.	0.	0.	0.	0	0	0	0	0
130	NON-TREATED	976	3882.	18030.	0.	0.	0.	0	0	0	0	0
140	NON-TREATED	1975	5168.	29642.	0.	0.	0.	0	0	0	0	0
180	NON-TREATED	978	4498.	7975.	0.	0.	0.	0	0	0	0	0
190	NON-TREATED	1952	9120.	12572.	0.	0.	0.	0	0	0	0	0
200	NON-TREATED	1962	9276.	9278.	0.	0.	0.	0	0	0	0	0
210	NON-TREATED	0	0.	0.	0.	0.	8607.	0	0	0	0	970
DECADE 1 TOTALS		10815	43069.	156907.	0.	0.	8607.	0	0	0	0	970

ACRES CLEAR CUT 970 INGROWTH 0. PARTIAL CUT VOLUME 0.

TOTAL ACREAGE 11785 AV GRWTH 156907. TOTAL DECADE VOLUME 8607.

ACRES NOT AVAILABLE TO DELETE FROM BASE, REMOVED ONLY THE AMOUNT AVAILABLE

ACRES NOT AVAILABLE TO DELETE FROM BASE, REMOVED ONLY THE AMOUNT AVAILABLE

FR-116

Prog. Area: 151
Prep. By: R. Hanson
Date: 8-2-77

FO-11

OUTPUT DESCRIPTION

OUTPUT TITLE: Acres by Stocking Class

OUTPUT FORM: Tables, maps graphic displays, etc.

OUTPUT DESCRIPTION: This output describes the present stocking situation.

USER(s): Foresters, District Staff, Area Manager & Staff

LOCATION(s): District Area

USAGE:
Timber Sale Planning
Package Planning
Rehabilitation

ACCESS LIMITATIONS: None.

RESPONSE TIMES: DESIRED: REQUIRED:

See Response Times - General

FREQUENCY OF PRODUCTION: 1/year for tables and overlays. Applies to approximately 30 forest districts.

DEPENDENCIES: None.

REQUEST PARAMETERS: Township (100-1695); Range (100-1699); Section (100-2501); County, etc. (100-0546); Planning Unit (100-1075); Area, Resource (100-0418); Size Class Type, Stand (0151-5875); Size Class, Stand (0151-5810); Site Class Type, Stand (0151-5926); Site Class, Stand (0151-5751); Forest Type, Existing Stand (0151-5766); Birth Data, Stand (0151-5812); Master Unit (0100-5891).

OUTPUT TITLE: Acres by Stocking Class.

SORT ORDER: Identical to sequence of request parameters.

ESTIMATED VOLUME: Once a month used in conjunction with other data elements.

COMPUTATIONS/PROCESSES:

ACCURACY: ± 5% map accuracy

SCALE: 1" = 1,000' to variable

ANNOTATIONS:
- Stocking Class
- Class of Forest Land
- Acres
- Stand#
- Type
- Size Class
- Birth year
- Site Class
- etc.

LEGEND:
- Scale
- Line Type
- Location

REMARKS: A very high use item in conjunction with other data elements.

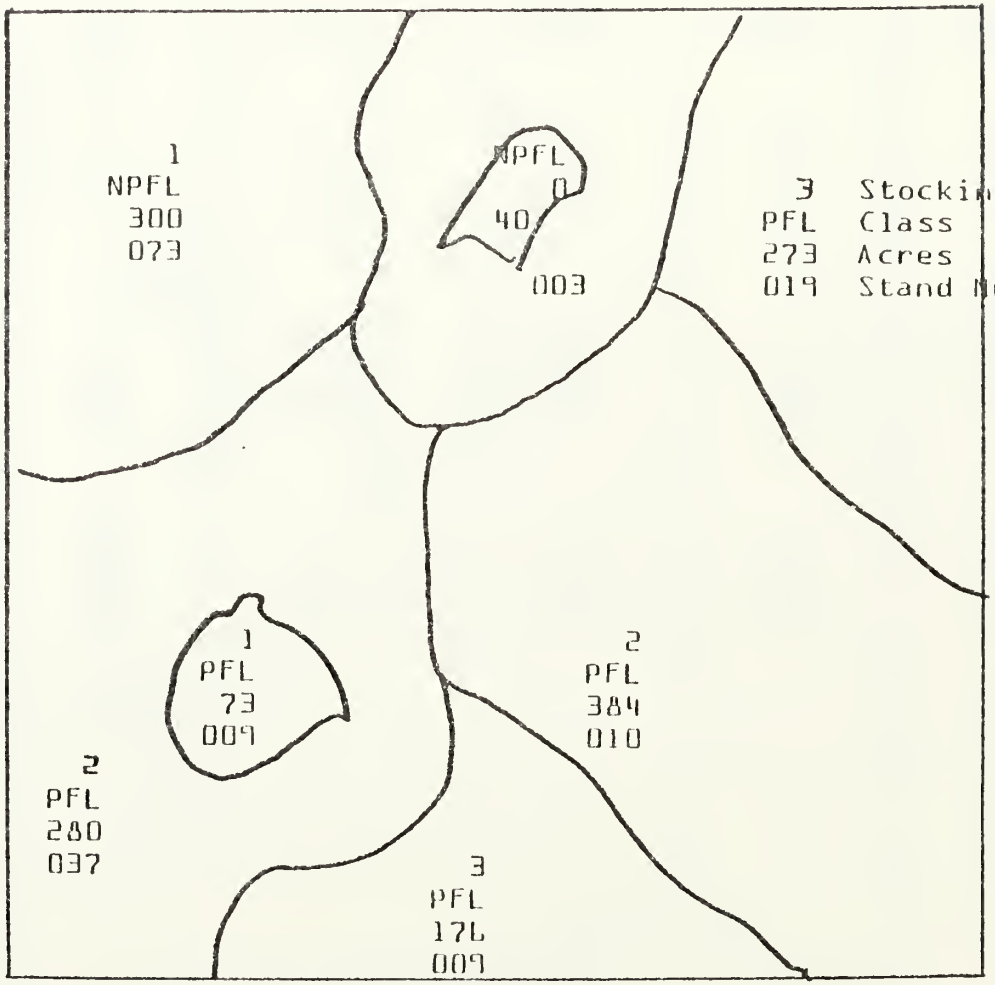
(100-6520)
Acres by Stocking Class and Forest Land Class

Planning Unit	Stocking Class					
	(0151-5770) 0	1	2	3	Total Acres	
(100-1075)						
Unit #1						
Productive For.	XXXX	XXXX	XXXXXX	XXXXX	XXXXX	
Non Prod. For.	XX	X	XX	XXX	XXXX	
Subtotal	XXXX					
Unit #2						
Productive For.	XXXX	XXXXX	XXXXX	XXXX	XXXXX	
Non Prod. For.	XX	XX	XX	XXX	XXX	
Subtotal		XXXXX	XXXXX		XXXXXX	
Unit #3						
Productive For.	--	XXX	XXXX	XXXXX	X	
Non Prod. For.	--	--	XX			
Subtotal	--	XXX	XXXX	XXXXX		
(0151-5815)						
Totals	XXXX	XXXXX	XXXXX	XXXXX	XXXXXXX	

FR-119

FO-11

Acres Of Stocking Class FD-11



Legend

Scale: 1"=5000'

Line Type —

Location {Township, Range, Section, UTM}

FR-120

Prog. Area: 151
Prep. By: R. Hanson
Date: 8-2-77

FO-12

OUTPUT DESCRIPTION

OUTPUT TITLE: Existing Forest Types

OUTPUT FORM: Graphics, graphic displays, maps, labels.

OUTPUT DESCRIPTION: Forest type acreages

USER(s): District Managers
Area Managers
Foresters

LOCATION(s): District & Area

USAGE: URA 3 updates, possible use in packages, compartment planning.

ACCESS LIMITATIONS: None.

RESPONSE TIMES: DESIRED: 1 wk - 5 minutes REQUIRED: 2 weeks

FREQUENCY OF PRODUCTION: max. 1/year per district with significant forest acreage. Approximately 30 districts.

DEPENDENCIES: None.

REQUEST PARAMETERS: Township (100-1695); Range (100-1699); Section (100-2501); County, etc. (100-0546); Planning Unit (100-1075); Area, Resource (100-0418); Stocking Class, Stand (0151-5770); Size Class Type, Stand (0151-5875); Size Class, Stand (0151-5810); Site Class Type (0151-5926); Site Class, Stand (0151-5751); Forest Type, Existing Stand (0132-2706); Class, Forest land (0151-5815).

OUTPUT TITLE: Existing Forest Types

SORT ORDER: Identical to sequence of request parameters.

ESTIMATED VOLUME: High volume in conjunction with other elements

COMPUTATIONS/PROCESSES:

ACCURACY: ±5%

SCALE: 1" - 1,000' or others

ANNOTATIONS: Productive forest land
Acreage
Species
Stand number

LEGEND: Scale
Line type
Location info.

REMARKS:

Forest Types by Productivity Class and Acres

Forest Types (0132-2706)	Planning Unit (0100-1075)					
	1	2	3	4	Total Acres	
	Acres (0100-6520)					
Productive Forest (0151-5815)						
Douglas fir	1374	1455	1833	--	4662	
Hemlock	235	--	--		235	
Englemann Sp.	175	--	--	486	660	
Western Larch	375		54	75	504	
PFL Subtotal	2159	1455	1887	560	6061	
Non-Productive Forest (0151-5815)						
Juniper	103				103	
Lodgepole pine		88			88	
NPFL Subtotal	103	88			191	
Totals	2262	1543	1887	560	6252	

FOREST TYPE ACREAGES

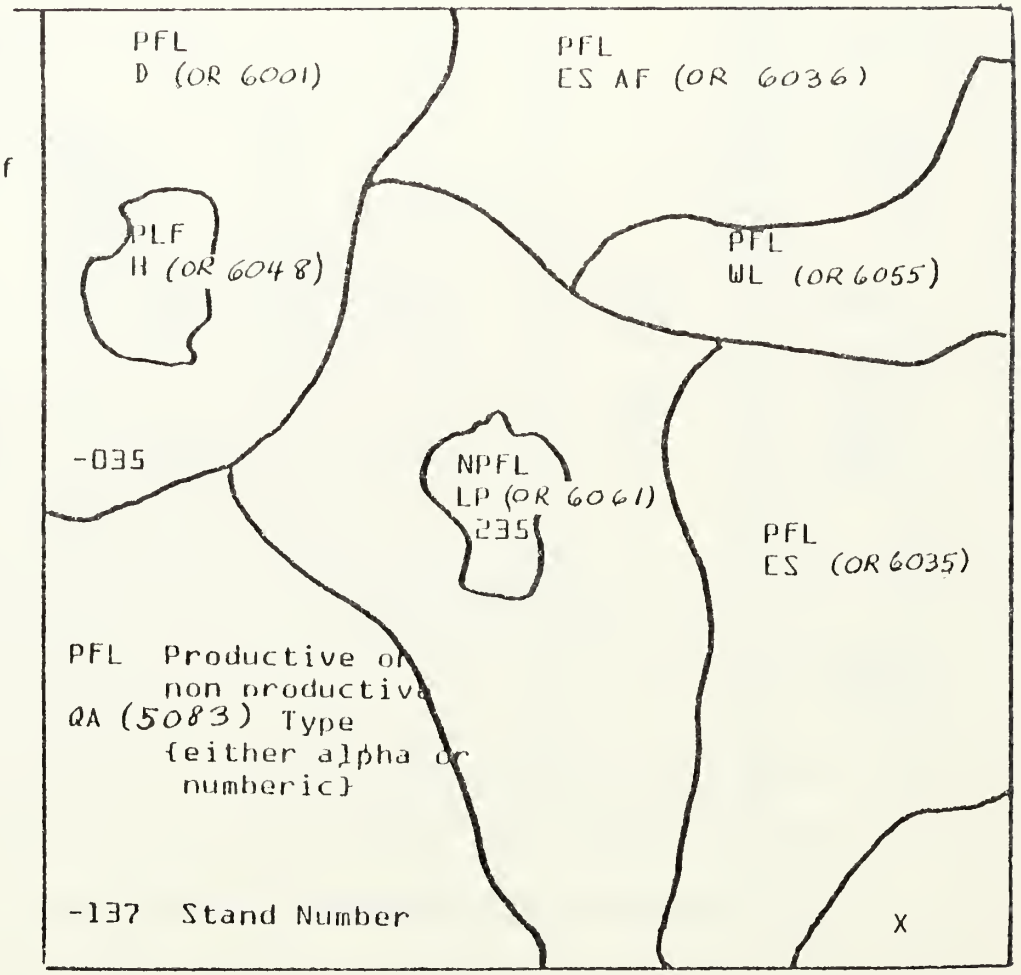
FO-12

Legend

Township, Range Section (if applicable)

Scale: 1"=5000'

Line type



FR-124

Prog. Area: 151
Prep. By: REH
Date: 7-26-77

FO-13

OUTPUT DESCRIPTION

OUTPUT TITLE: Site Quality by Acres

OUTPUT FORM: Printouts, Maps, Graphic Displays, Data Display.

OUTPUT DESCRIPTION:

USER(s): District Forestry People
Area Managers
State Office Silviculture

LOCATION(s): District Office
Area Office
State Office

USAGE: Describes the productive potential of a forested area for planning harvests, rehabilitation treatments, and designates the productive and non-productive forest land.

ACCESS LIMITATIONS: None.

RESPONSE TIMES: DESIRED: REQUIRED:

See Response Times - General

FREQUENCY OF PRODUCTION: Once a month per district with significant forest acreage. Approximately 30 districts.

DEPENDENCIES: None.

REQUEST PARAMETERS: Township (100-1695); Range (100-1699); Section (100-2501); County, etc. (100-0546); Planning Unit (100-1075); Area, Resource (100-0418); Site Class Type, Stand (0151-5926); Master Unit (0100-5891).

FO-13

OUTPUT DESCRIPTION
Page 2 of 2

OUTPUT TITLE: SITE QUALITY BY ACRES

SORT ORDER: Identical to sequence of request parameters

ESTIMATED VOLUME: 1 page summaries and maps - numerous section maps

COMPUTATIONS/PROCESSES: None

ACCURACY: ± 5% on Maps to nearest acres on calculations for tables.

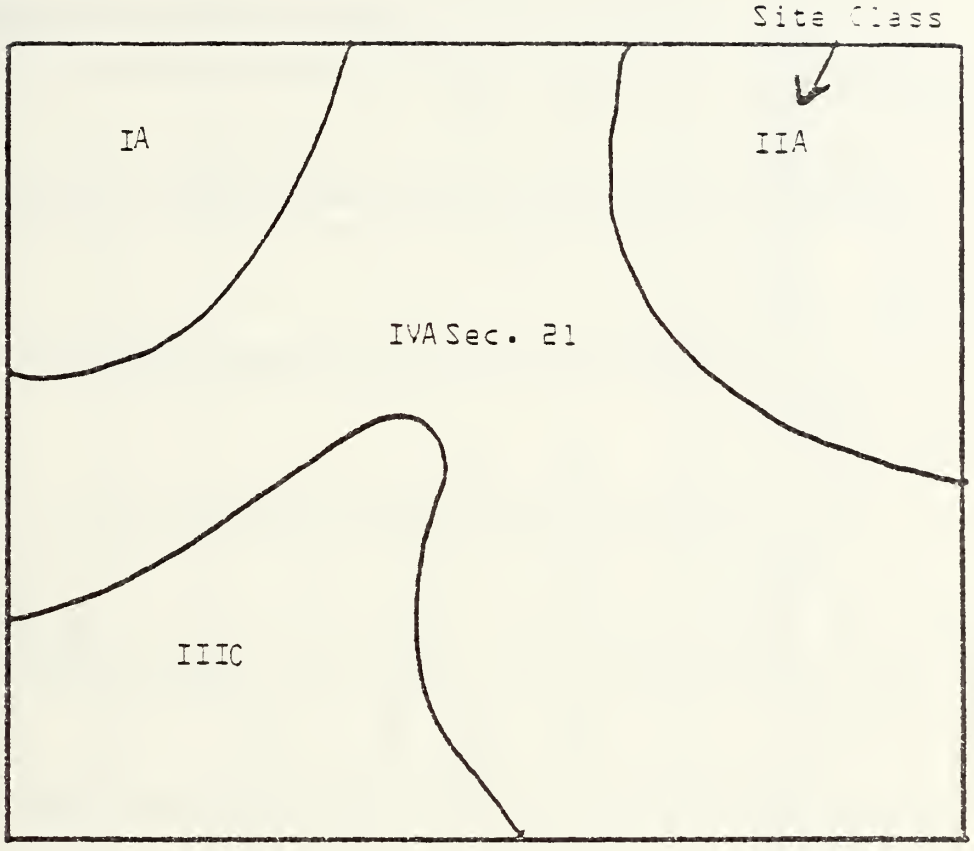
SCALE: 1"=1,000' to other scales as requested

ANNOTATIONS: Site Class
Acres
Township, Range & Section

LEGEND: Scale
Line Type
Program Area

REMARKS:

TRS DESCRIBE SITE QUALITY OVERLAY ON FOREST LANDS



Site Class	Site Class Type	Acreage
I	A	
II	A	
III	C	
IV	A	
V		
VI		
VII		

SITE QUALITY BY ACRES

(100-6520)

FD-13

Planning Unit 100-1075	Site Class Type 151-5926	Productive Forest Land (0151-5815) Site Class 151-5751							Non-Prod. Forest land	Total Acres by P.U.
		1A	1	2	3	4	5	6	7	
Planning Unit No. 1	C	xxxxx	xxxxx	xxxx	xxx	xx	xxx		xxx	xxxx
Planning Unit No.2	C	xxx	xxx	xxxx	xxxx	xx	xxx		xxx	xxxxxx
Planning Unit No. 8	C	xx	xxx	xxx	xxxxx	xxx	xx			xxxxxx
Acreage Totals by Site Class	X	xxxxx	xxx	xxxx	xxxx	xxx	xxx		xxxx	xxxxxxxxx

FR-128

FO-13

SITE QUALITY BY ACRES

(100-1075) PLANNING UNIT	151-5927 SITE INDEX TYPE	PRODUCTIVE FOREST LAND (0151-5815) SITE INDEX (151-5750) 220	210	200	190	180	170	160	150	140	130	120	110	100	90	80	70	60	50	40	30	NON PROD FOREST LAND 20	10	TOTAL ACRES BY P.U.
PLANNING UNIT #1	AA	XX			XXX	XXXX			XXXX	XXX	XXXX	XXXXX							XX					XXXX
PLANNING UNIT #2	AA		XX					XXXX	XXXX	XXX		XXXX										X		XXXXXX
TOTAL ACREAGE BY SITE INDEX	/	XX	XX		XXX	XXXX		XXXX	XXXX	XXXX	XXX													XXXXXXX

FR-129

Prog. Area: 161
Prep. By: REH
Date: 7-26-77

FO-14

OUTPUT DESCRIPTION

OUTPUT TITLE: Problem Reforestation Acres Within the Productive Forest Land

OUTPUT FORM: Map - Graphic Display
Data Display Tables

OUTPUT DESCRIPTION:

USER(s): District - Planners
Rehabilitation Foresters

LOCATION(s): State Office

USAGE: Defines the timber base. Used in other problems. Permanent data base.

ACCESS LIMITATIONS: None.

RESPONSE TIMES: DESIRED: REQUIRED:

See Response Times - General

FREQUENCY OF PRODUCTION: Twice a year per district with a significant reforestation program. Approximately 15 districts.

DEPENDENCIES: Annual work plan, program packages, timber sale plan.

REQUEST PARAMETERS: Township (100-1695); Range (100-1699); Section (100-2501); County, etc. (100-0546); Planning Unit (100-1075); Area, Resource (100-0418); Acres, Data Unit (0100-6520); TPCC Problem Site - Class, First (Second, Third) (0151-5816) (5815-5820); TPCC, Prob. Management - Decision, First (Second, Third) (0151-5817) (5819-5821); Master Unit (0100-5891).

OUTPUT DESCRIPTION
Page 2 of 2

OUTPUT TITLE: PROBLEM REFORESTATION ACRES WITHIN THE PRODUCTIVE FOREST LAND

SORT ORDER: Identical to sequence of request parameters

ESTIMATED VOLUME: Variable - 1 page output to multiple maps

COMPUTATIONS/PROCESSES:

ACCURACY: min. 1 acre

SCALE: 1"-1,000' to 1"-250,000'

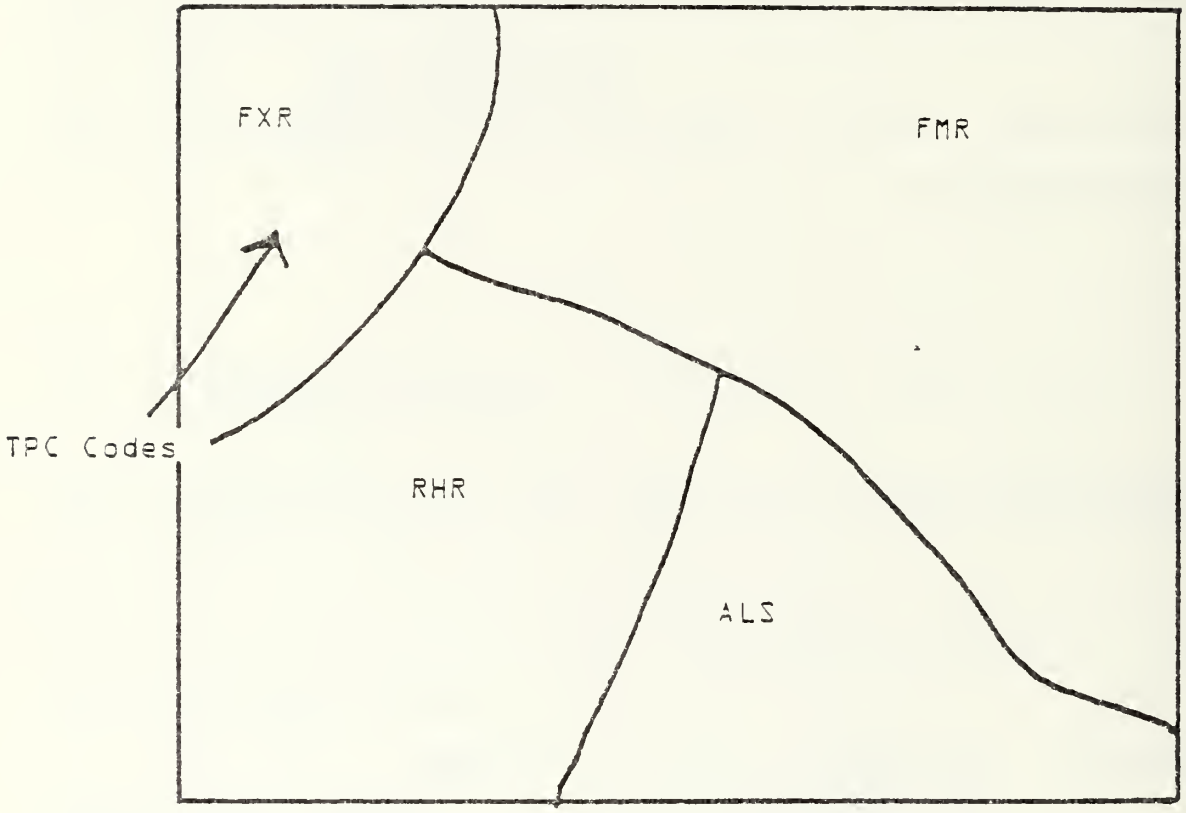
ANNOTATIONS:
TPCC CODES ACRES
TPCC MGMT DECISION CODES
TWN RANGE SEC
SERIAL NO.

LEGEND: Scale
Line type

REMARKS: May be high use item. Will need to be overlayed with timber types to define acres and volumes by species size class, stocking class, age, and TPCC management decisions.

Overlay

Problem Sites Within Productive Forest Land for T.R.S. No.



TPC Code	Acres
FXR (5815 and 5917)	
FMR	
RHR	
ALS	

FO-14

PROBLEM REFORESTATION ACRES WITHIN THE PRODUCTIVE FOREST LAND
(100-6520)

CATEGORY	PLANNING UNIT #1 (100-1075)	PLANNING UNIT #2	PLANNING UNIT #3	PLANNING UNIT #4		TOTALS ACRES/VOL/CODE
	acres/vol/code	acres/vol/code	acres/vol/code	acres/vol/code		
NON PROBLEM	XXXXX YYYY ZZ	XXXXX YYYY ZZ	XXXXX YYY ZZ	XXXXX YYYY ZZ		XXXXX YYY ZZ
	151-5816			151-5872		
RESTRICTED	151-5817					
FXR	XXXXX YYYY ZZ		0100-6520			
FGR						
FMR						
FWR						
RHR						
ALR						
TOTAL RESTRICTED	XXXXXYYYYZZ					
WITHDRAWN	151-5817					
FGW						
FMW						
FWW						
FXW						
RHW						
ALW						
TOTAL WITHDRAWN	XXXXX YYY ZZ					

FR-133

FO-11/

PROBLEM REFORESTATION AREA PRODUCTIVE FOREST LAND

IDENTIFICATION	(151-5816) 1st IPCC PROBLEM SITE CLASS	(151-5817) 1st IPCC PROBLEM MGNT DECIS.	(151-5818) 2nd IPCC PROBLEM SITE CLASS	(151-5819) 2nd IPCC PROBLEM MGNT DECISION	(151-5820) 3rd IPCC PROBLEM SITE CLASS	(151-5821) 3rd IPCC PROBLEM MGNT DECISION	(100-6520) ACRES	(141-5732) SOIL SERIES	(100-5746) SLOPE	(100-6523) ASPECT	(100-0431) ELEV
	XX	Y	XX	Y	XX	Y	ZZZ	AAA		BB	CCCCC

INCLUDES STATE, COUNTY, CONGRESSIONAL DISTRIST, TOWNSHIP, RANGE, SECTION, I.D., ETC...,

Prog. Area: 151
Prep. By: R. Hanson
Date: 7-29-77

FO-17

OUTPUT DESCRIPTION
Page 1 of 2

OUTPUT TITLE: Acreage of Age Classes, Productive and Nonproductive Forest Land

OUTPUT FORM: Table - Data Display
Maps - Graphic

OUTPUT DESCRIPTION:

USER(s): District Foresters
Area Managers

LOCATION(s): Various

USAGE: To find location of older stands for harvest acreage calculations of age classes for allowable cut calculations.

ACCESS LIMITATIONS: None.

RESPONSE TIMES: DESIRED: REQUIRED:

See Response Times - General

FREQUENCY OF PRODUCTION: Once every five years per district with significant forest acreage. Approximately 30 districts.

DEPENDENCIES: None.

REQUEST PARAMETERS: Township (100-1695); Range (100-1699); Section (100-2501); County, etc. (100-0546); Planning Unit (100-1075); Area, Resource (100-0418); Site Class Type, Stand (0151-5926); Site Class, Stand (0151-5751); Size Class Type, Stand (0151-5875); Size Class, Stand (0151-5810); State (100-0690); Stocking Class, Stand (0151-5770); Master Unit (0100-5891).

OUTPUT DESCRIPTION
Page 2 of 2

OUTPUT TITLE: ACREAGE OF AGE CLASSES, PRODUCTIVE AND NONPRODUCTIVE FOREST LAND

SORT ORDER: Identical to sequence of request parameters

ESTIMATED VOLUME: Numerous tables - extensive maps - displays

COMPUTATIONS/PROCESSES: Calculate age from stand birth year; i.e. - present date - St. Birth Year
Calculate age class; i.e., - age 26-35 = Age Class 30

ACCURACY:

SCALE: 1"=1,000' to 1-24,000'

ANNOTATIONS: Age class

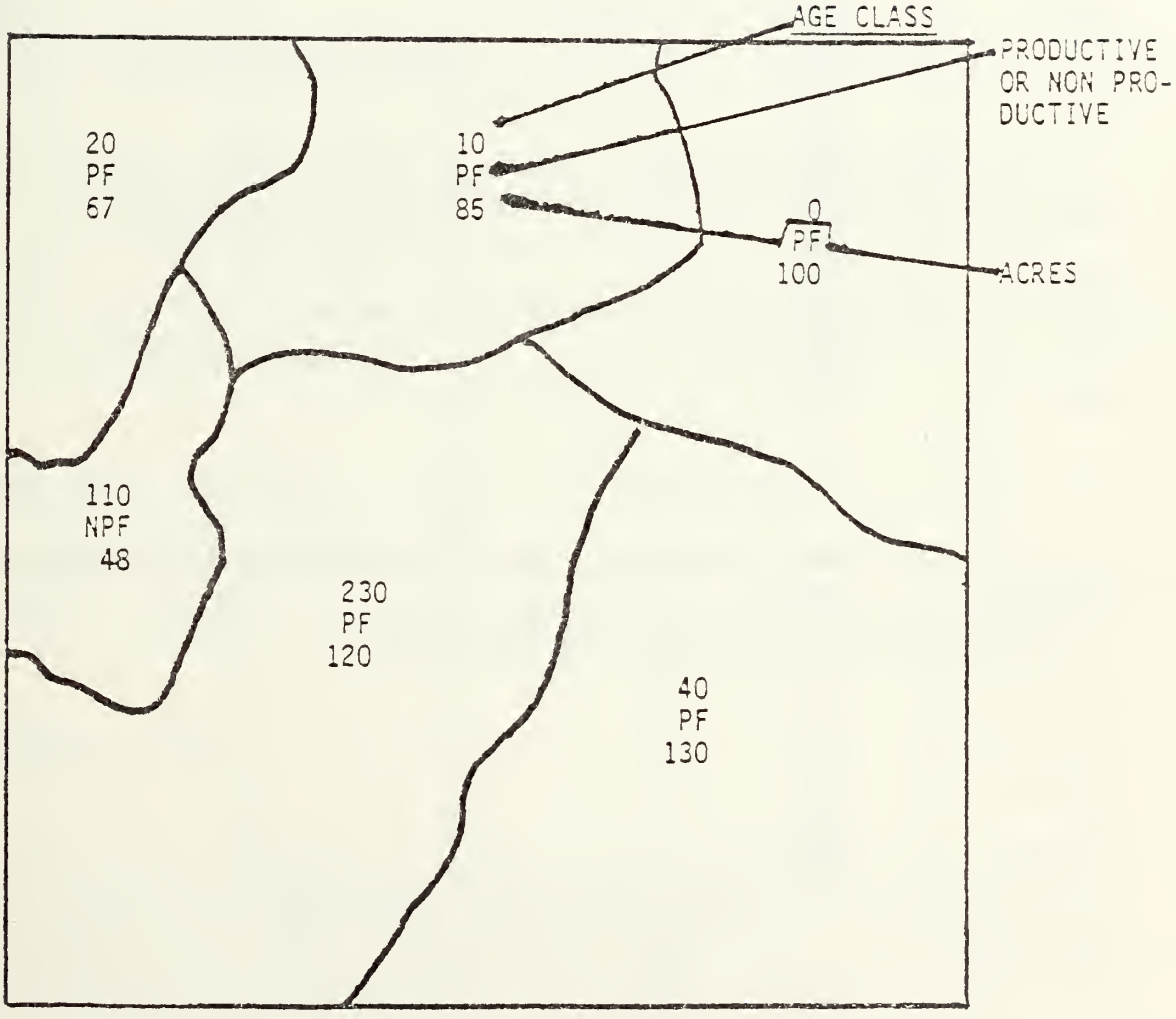
LEGEND: Location Twshp, Range, Section
Line Type
Scale

REMARKS: A high use item

FO-17

ACRES OF PRODUCTIVE & NONPRODUCTIVE FOREST

LAND BY AGE CLASS



LEGEND
TOWNSHIP, RANGE, SECTION
SCALE
LINE TYPE ——— AGE CLASS

550 acre section

ACREAGE OF AGE CLASSES PRODUCTIVE & NON PRODUCTIVE FOR. LAND
(100-6520)

(CALCULATE FROM
~~0151-48 151-5813~~)

STAND AGE (0151-5813) (YEAR)	PF=PROD. FOR. NPF=NON PROD. FOR.	ACRES BY AGE CLASS			ACREAGE TOTALS BY AGE CLASS
		PLANNING UNIT #1 0100-1075	PLANNING UNIT #2	PLANNING UNIT #3	
	PF	XXXXX	XXX	XXXXX	XXXXXX
01-05	NPF	XX	XX	XXX	
	PF				
06-15	NPF				
	PF	XXXXX			XXXXX
16-25	NPF	XX			XX
	PF				
26-35	NPF				
	PF				
36-45	NPF				
	PF				
46-55	NPF				
	PF				
56-65	NPF				
	PF				
66-75	NPF				
	PF				
76-85	NPF				
	PF				
306-315	NPF				
	PF				
316-325	NPF				
	PF				
326-335	NPF				
	PF				
336-345	NPF				
	PF				
346-355	NPF				
TOTALS BY PLANNING UNIT	PF	XXXXXX	XXXXX	XXXXX	XXXXX
	NPF	XXX	XXX	XXX	XXX

FR-138

Prog. Area: 151
Prep. By: Russ Hanson
Date: 7-28-77

FO-18

OUTPUT DESCRIPTION
Page 1 of 2

OUTPUT TITLE: Forest Acreage by Diameter Class

OUTPUT FORM: Listing and map, graphic display, data display.

OUTPUT DESCRIPTION:

USER(s): District case management LOCATION(s): District
URA 3 calls for size class

USAGE: Can be used to define the acres in various size classes to determine the availability of merchantable timber. Used in allowable cut calculations.

ACCESS LIMITATIONS: None.

RESPONSE TIMES: DESIRED: REQUIRED:

See Response Times - General

FREQUENCY OF PRODUCTION: Once in 5-10 years per district with significant forest acreage - approximately 30 districts.

DEPENDENCIES: None.

REQUEST PARAMETERS: Township (100-1695); Range (100-1699); Section (100-2501); County, etc. (100-0546); Planning Unit (100-1075); Area, Resource (100-0418); Forest Type, Existing Stand (0151-5766); Stocking Class, Stand (0151-5770); Site Class Type, Stand (0151-5926); Site Class, Stand (0151-5751); Birth Date, Stand (0151-5812); Identification Number, Stand (0151-5921); Master Unit (0100-5891).

FO-13

OUTPUT DESCRIPTION
Page 2 of 2

OUTPUT TITLE: FOREST ACREAGE BY DIAMETER CLASS

SORT ORDER: Identical to sequence at request parameters

ESTIMATED VOLUME: 1 page summary output variable for maps and case management

COMPUTATIONS/PROCESSES:

ACCURACY: N/A

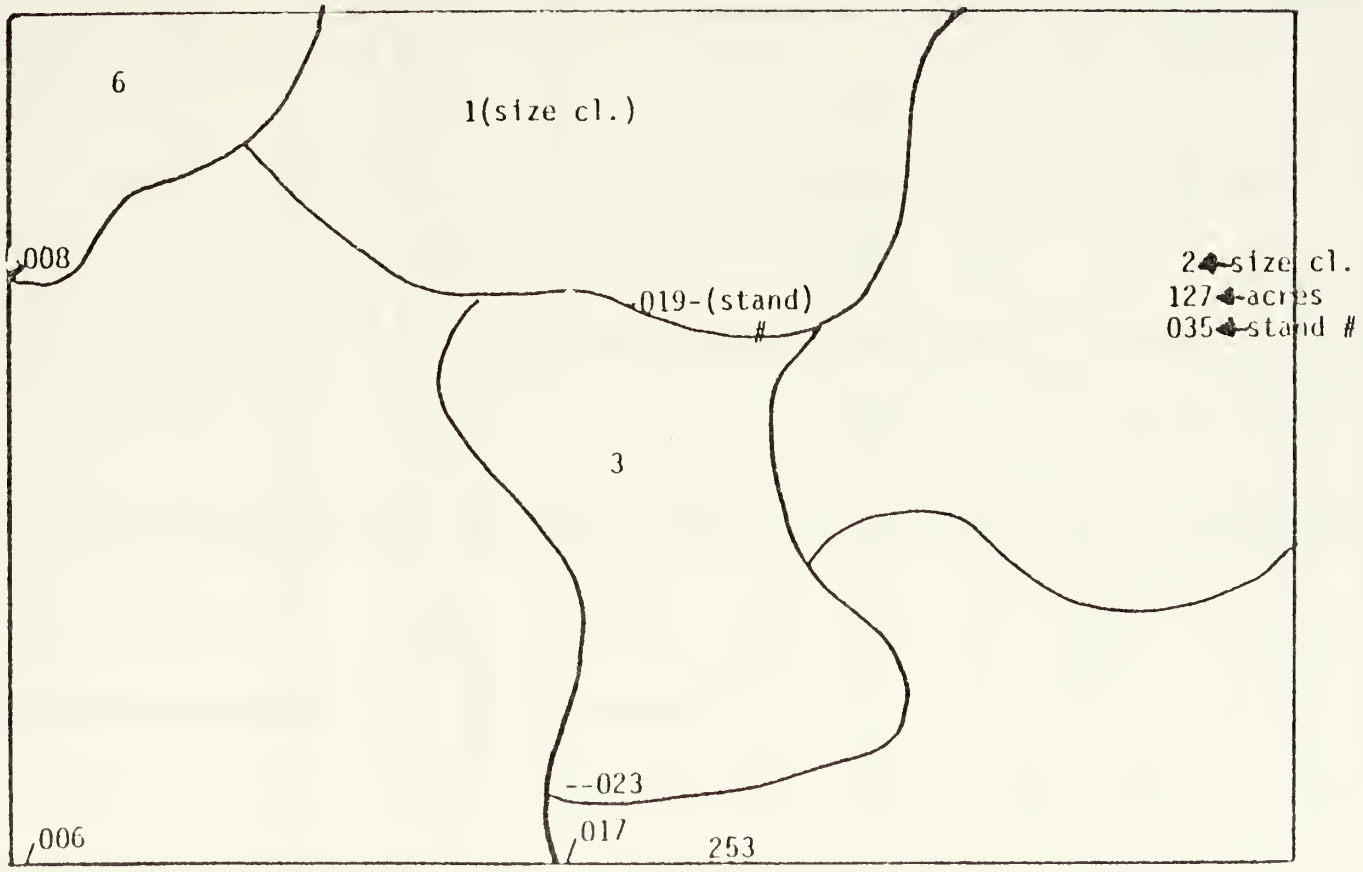
SCALE: 1"=1,000' to variable for district need

ANNOTATIONS: Annotate w/size classes and size class type acres, stand #

LEGEND:

Size Class	Acreage	Scale
1	Acres	
.		
.		
7		

STAND SIZE OVERLAY (MAP)



SCALE: 1"=1000'
SIZE CLASS BOUNDARY ——
T 155 R7W SEC 13

FR-141

ACREAGES BY SIZE CLASS AND FOREST LAND CLASS
(151-5875)

(100-1075) PLANNING UNIT	SIZE CLASS TYPE	SIZE CLASS (151-5810) 1	2	3	4	5	6	UNIT TOTALS
UNIT 1								
PROD. FOR. LAND	A	XXXX	XXXXX (0100-6520)	XXX	XXXXX	XX		XXXXX
NON PROD. FOR.	A	XXX						XXX
UNIT #2								
PROD. FOR. LAND	A	XXXX	XXX	XXX	XXXX	XX		XXXXX
NON PROD. FOR.	A	XXX	XXX					XXXX
TOTALS		XXXXX	XXXXX	XXX	XXXXXX	XX		XXXXX

Prog. Area: 151
Prep. By: Russ Hanson
Date: September 77

FO-19

OUTPUT DESCRIPTION
Page 1 of 2

OUTPUT TITLE: Forest and Vegetal Products Volume

OUTPUT FORM: Graphs and Maps

OUTPUT DESCRIPTION:

USER(s): Area Managers, Dist. & Area Foresters

LOCATION(s): District

USAGE: URA 3, MISs

ACCESS LIMITATIONS: NA

RESPONSE TIMES: DESIRED: REQUIRED:

See Response Times - General

FREQUENCY OF PRODUCTION: Once a year per district with timber sale program. Approximately 20 districts.

DEPENDENCIES: URA, Timber sale plans

REQUEST PARAMETERS: Township (100-1695); Range (100-1699); Section (100-2501); County, etc. (100-0546); Planning Unit (100-1075); Area, Resource (100-0418); Products, Vegetative (0151-5759); Master Unit (0100-5891).

OUTPUT TITLE: Forest and Vegetal Products Volume

SORT ORDER: Identical to sequence of request parameters

ESTIMATED VOLUME: 10-20 graphs and maps

COMPUTATIONS/PROCESSES: may require calculation if units entered on a per acre basis x # acres in a stand

ACCURACY: Nearest acre

SCALE: 1" = 1,000' to various scales

ANNOTATIONS: Product Code
Stand #
Total Units

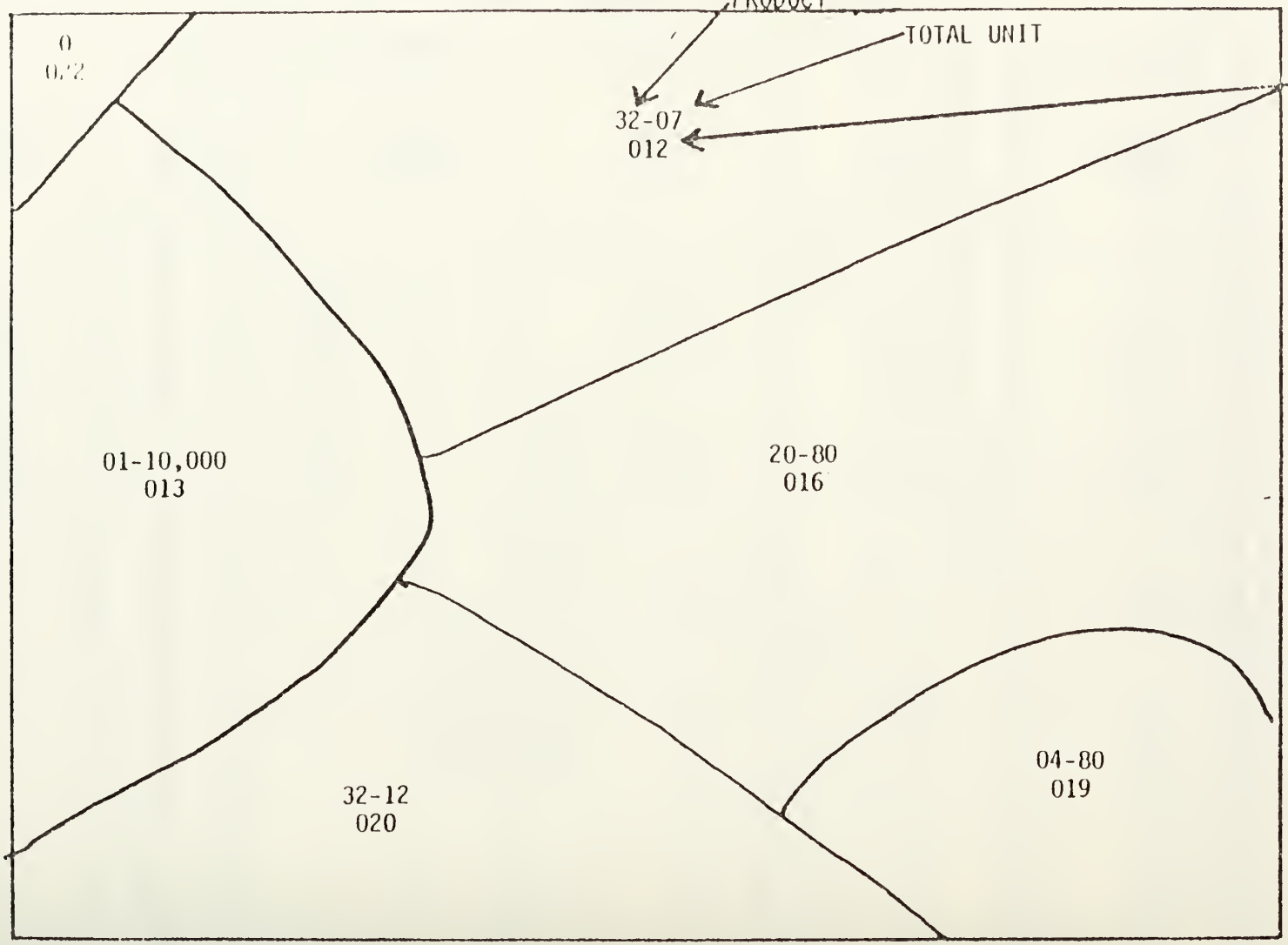
LEGEND: Township, range, section or other location info.
Line type
Scale

REMARKS:

* Note: There is no good input form or source for some of this information unless SVIM picks up some of this. Generally it will be restricted to commercial timber volumes.

FO-19

OVERLAY OF FOREST PRODUCTS



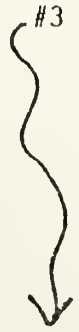
LEGEND

SCALE 1"= XXXX'
LINE TYPE FOR PRODUCTS BOUNDARY
TOWNSHIP RANGE & SECTION

FR-145

FOREST & VEGETAL PRODUCTS VOLUME

(100-1075) PLANNING UNIT	(0151-5759) PRODUCT CODE	(151-5872) UNIT OF MEASURE	(151-5789) UNITS/ ACRE	(100-6520) STAND. ACRES	TOTAL UNIT
#1	01	01	43.5	1,000	43,500
	32	07	12	150	1,800
	20	10	75	20	1,500
	04	03	2	40	80
#2	ZZ	YY	XXXX	XXX	XXXX
	AA	BB	XX	XXX	XXXX



FR-146

FO-19

Prog. Area: 0151
Prep. By: R. Hanson
Date: 8/5/77

FO-27

OUTPUT DESCRIPTION

OUTPUT TITLE: Site Preparation Opportunities

OUTPUT FORM: Table, Printed form, Graphic display, Maps

OUTPUT DESCRIPTION: A table or overlay of areas & acreages requiring some sort of site preparation prior to reforestation treatments.

USER(s): District Forestry People
Area Managers
Budget People

LOCATION(s): State Office
District Office

USAGE: Planning for future budgets
Planning for future projects

ACCESS LIMITATIONS: None.

See Response Times - General

RESPONSE TIMES: DESIRED: REQUIRED:

See Response Times - General

FREQUENCY OF PRODUCTION: Once every 6 months per district with a significant forest acreage. Approximately 30 districts.

DEPENDENCIES: None.

REQUEST PARAMETERS: Township (100-1695); Range (100-1699); Section (100-2501); County, etc. (100-0546); Planning Unit (100-1075); Area Resource (100-0418); Date, Past or Recommended Treatments (0151-5830); Site Class Type, Stand (0151-5926); Site Class, Stand (0151-5751); Aspect (100-6523); Elevation (100-0431); Master Unit (0100-5891).

OUTPUT DESCRIPTION

OUTPUT TITLE: Site Preparation Opportunities

SORT ORDER: Identical to request parameters.

ESTIMATED VOLUME: One table - numberous maps

COMPUTATIONS/PROCESSES:

ACCURACY: ± 5% on maps.

SCALE: 1" = 1,000' to various other scales as needed

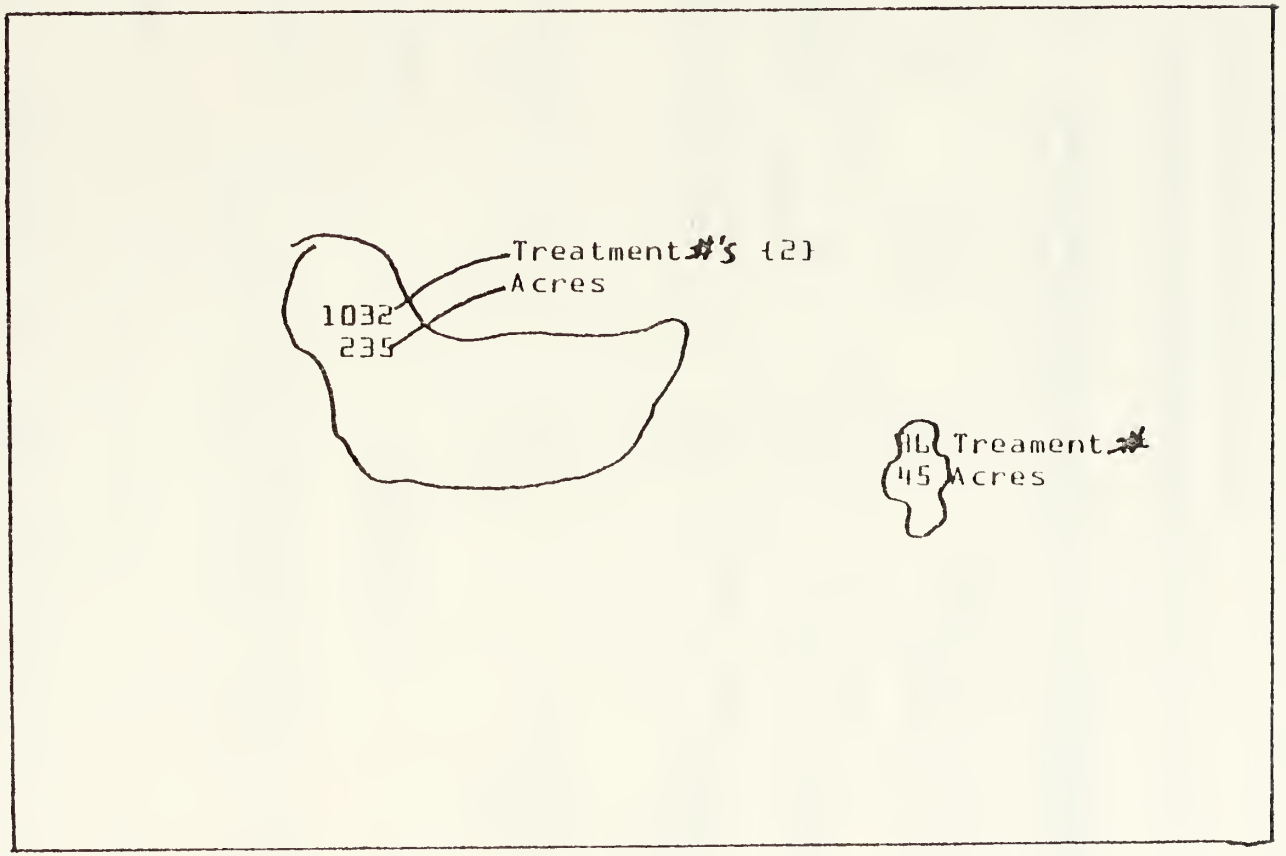
ANNOTATIONS: Treatment numbers
Acreages
Others as needed

LEGEND: Scale
Location
Line Type

REMARKS:

FO-21

Site Preparation Opportunities Overlay



FR-149

Legend

Scale: 1" = xxxx'

Line type _____ Recommended Treatment

Location Township Range, Section, UTM,, State Plane coordinates

Site Preparation Opportunities

Planning Unit (0100-1075)	Treatment Recommendations and Acreages				Unit Totals
1					
Treatment (0151-5851)	10	32	36		---
Acres (0100-6320)	235	235	45		515
2					
Treatment	43	36			---
Acres	170	170			340
3					
Treatment	10				---
Acres	72				72
TOTALS:					
Treatment	10	43	32	36	---
Acres	307	170	235	215	927

Prog. Area: 0151
Prep. By: R. Hanson
Date: 5 August 77

FO-28

OUTPUT DESCRIPTION

OUTPUT TITLE: Site Improvement Opportunities

OUTPUT FORM: Maps-Graphics, Tables, Printouts, Graphic Displays

OUTPUT DESCRIPTION: A table and/or map of possible site improvement areas. Summations by treatment & unit acres.

USER(s): District Forestry
Area Manager
State Office Forestry

LOCATION(s): Area Office
District office

USAGE: Locate & estimate costs for various treatments expected to increase forest production.

ACCESS LIMITATIONS: None.

RESPONSE TIMES: DESIRED: REQUIRED:

See Response Times - General

FREQUENCY OF PRODUCTION: Once a month per forest district with a fairly intensive management program. Approximately 20 districts.

DEPENDENCIES: None.

REQUEST PARAMETERS: Township (100-1695); Range (100-1699); Section (100-2501); County, etc. (100-0546); Planning Unit (100-1075); Area, Resource (100-0418); Site Index Type, Stand (0151-5927); Site Index, Stand (0151-5751); Forest Type, Existing Stand (0151-5766); Size Class, Stand (0151-5810); Stocking Class, Stand (0151-5770); Birthdate, Stand (0151-5812); Slope, Class (100-5746); Aspect (100-6523); Class, Reforestation (0151-5858); Size Class Type, Stand (0151-5875); Master Unit (0100-5891).

OUTPUT TITLE: Site Improvement Opportunities

SORT ORDER: Identical to request parameters.

ESTIMATED VOLUME: Table-Several Maps-Light Volume

COMPUTATIONS/PROCESSES:

ACCURACY: ±5%

SCALE: 1" = 1000' - other scales as requested

ANNOTATIONS: Site improvement codes
Acreages

LEGEND: Scale
Line type and location

REMARKS:
Note: As with all recommended treatments, if more than one treatment is listed acreage figures can be misleading as to total acres to be treated. It is assumed users will be aware of this.

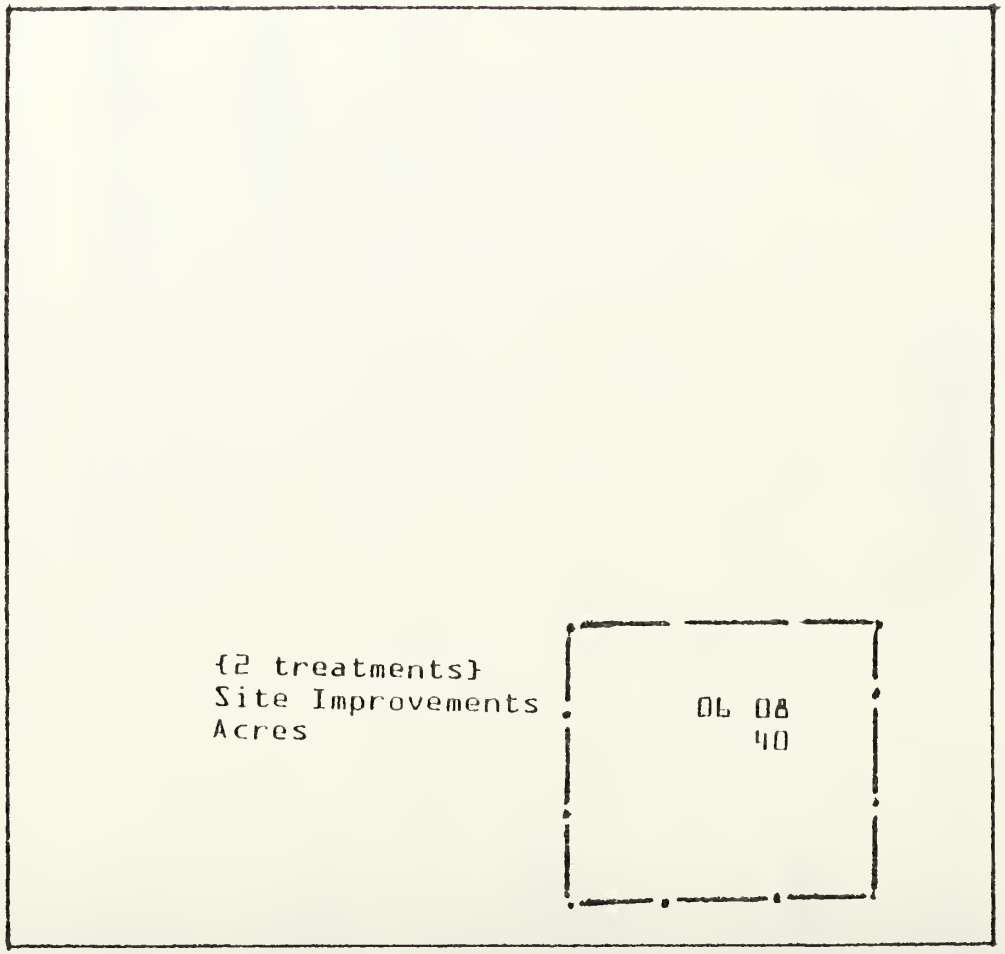
F-38

SITE IMPROVEMENT OPPORTUNITIES

Planning Unit (0100-1075)	Fertilization	Irrigation	Unit Total
1			
Treatment 0151-5843	03	--	--
Acres	347	--	347
2			
Treatment 0151-5835	06	08	--
Acres	40	40	80
3			
Treatment	--	--	--
Acres	--	--	--
Totals	387	40	427

FO-28

Site Improvement Opportunities Overlay



Legend

Line type ---.---
Recomm. Site Improv.

Scale 1" 1000'

Location Township,
Range,
Section,
Etc.

FR-154

Prog. Area: 151
Prep. By: R. Hanson
Date: 3 August 77

FO-29

OUTPUT DESCRIPTION

OUTPUT TITLE: Reforestation Opportunities

OUTPUT FORM: Printout, Map

OUTPUT DESCRIPTION: A printout showing areas in need of reforestation and those who may need reforestation in the near (5 years) future.

USER(s): Area Manager
Rehabilitation Specialists

LOCATION(s): Area Office
District Office

USAGE: Used to plan reforestation need for the annual work plan.

ACCESS LIMITATIONS: None.

RESPONSE TIMES: DESIRED: REQUIRED:

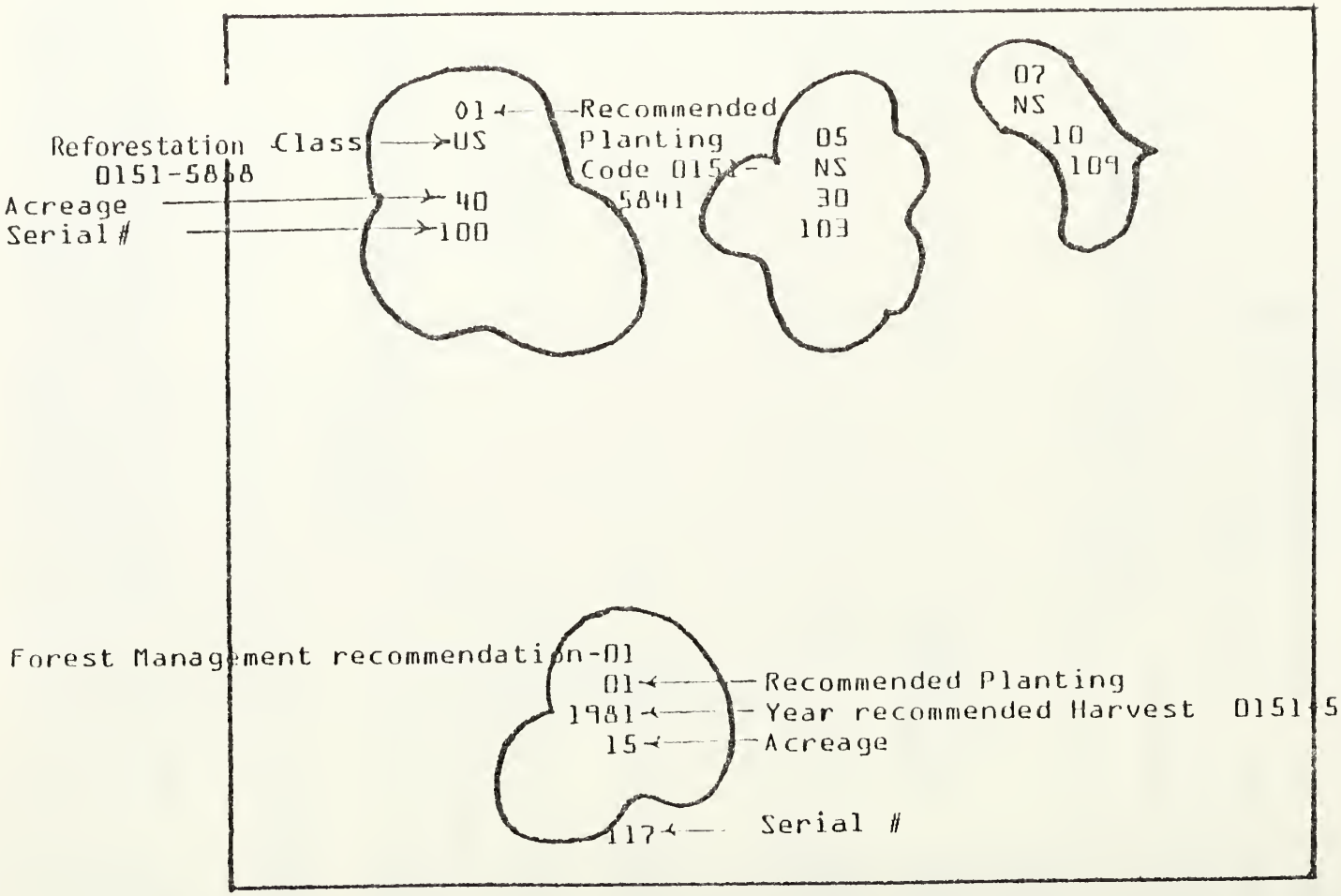
See Response Times - General

FREQUENCY OF PRODUCTION: Once a month per district with a significant reforestation program. Approximately 15 districts.

DEPENDENCIES: None.

REQUEST PARAMETERS: Township (100-1695); Range (100-1699); Section (100-2501); County, etc. (100-0546); Planning Unit (100-1075); Area, Resource (100-0418); District, Congressional (100-0547); Class, Reforestation (0151-5875); Seeding Treatment, Recommended (0151-5839); Planting Method, Recommended (0151-5841); Date, Past or Recommended Treatments (0151-5830); Master Unit (0100-5891).

Planting Opportunities (Similar one for seeding Opp.)



Legend

Scale: 1" xxx' or x mile

Line Type _____
Reforstaion Opp.

Location: TWP, RANGE Section, UTM, State Plane Coord. Etc.

OUTPUT DESCRIPTION

OUTPUT TITLE:

Reforestation Opportunities

SORT ORDER:

Identical to request parameters

ESTIMATED VOLUME:

1 page printouts 10+ pages maps

COMPUTATIONS/PROCESSES:

ACCURACY:

± 5% maps

SCALE:

1" = 1000' & other scales as required

ANNOTATIONS:

Forest Management Recommendations
Serial Number
Planting or seeding recommendation
Acreage

LEGEND:

Scale
Line type
Location

REMARKS:

Possibly a high use item in case management if locational information is used rather than summary tables

REFORESTATION OPPORTUNITIES

Planning Unit (0100-1075)	PLANTING (0151-5841)							UNIT TOTAL	SEEDING (0151-5839)							UNIT TOTAL
	ACRES NOW AVAILABLE		ACRES AVAILABLE-5YRS.						ACRES NOW AVAILABLE		ACRES AVAILABLE 5YRS.					
	Non-Stocked (0151-5858)	UNDER-STOCKED	1	2	3	4	5		NON-STOCKED	UNDER-STOCKED	1	2	3	4	5	
UNIT #1	201 0100-6520	347	1100	1000	1200	1105	1115	6068	100	300	50	200	---	100	200	950
UNIT #2	35	363	600	700	700	500	600	3498	50	---	100	300	150	50	---	650
UNIT #3	---	207	300	---	350	---	---	857	---	---	---	---	---	---	---	---
TOTAL	236	917	2000	1700	2250	1605	1715	10423	150	300	150	500	150	150	200	1600

FR-158

FO-29

Prog. Area: 151
Prep. By: R. Hanson
Date: 8-4-77

FO-30

OUTPUT DESCRIPTION

OUTPUT TITLE: Recommended Improved Tree Planting Acreage

OUTPUT FORM: Table - Overlay, Graphic Display, Data Display

OUTPUT DESCRIPTION: Acreages of areas which have been identified for planting with genetically improved stock.

USER(s): District renabitation Forester
State Rehabitation Forester
Area Manager

LOCATION(s): State Office
District Office

USAGE: Can define areas of opportunities for planting genetically improved trees. In conjunction with trees/acre to be planted it can serve to alert nurseries to future needs by species & improvement class.

ACCESS LIMITATIONS: None.

RESPONSE TIMES: DESIRED: REQUIRED:

See Response Times - General

FREQUENCY OF PRODUCTION: Once a year per district with a genetically improved tree planting program. Approximately 10 districts.

DEPENDENCIES: None.

REQUEST PARAMETERS: Township (100-1695); Range (100-1699); Section (100-2501); County, Etc. (100-0546); Planning Unit (100-1075); Area, Resource (100-0418); Class, Reforestation (0151-5875); Site Class Type, Stand (0151-5926); Site Class, Stand (0151-5751); Elevation (100-0431); Slope, Class (100-5746); Forest Type, Existing Stand (0151-5766); Trees per Acre Recommended (0151-5863); Master Unit (0100-5891).

OUTPUT TITLE:

Recommended Improved Tree Planting Acreage

SORT ORDER: Identical to request parameters

ESTIMATED VOLUME: 1 - numerous maps on a section by section basis where information is entered

COMPUTATIONS/PROCESSES:

ACCURACY:

± 5%

SCALE:

1" = 1000'

ANNOTATIONS:

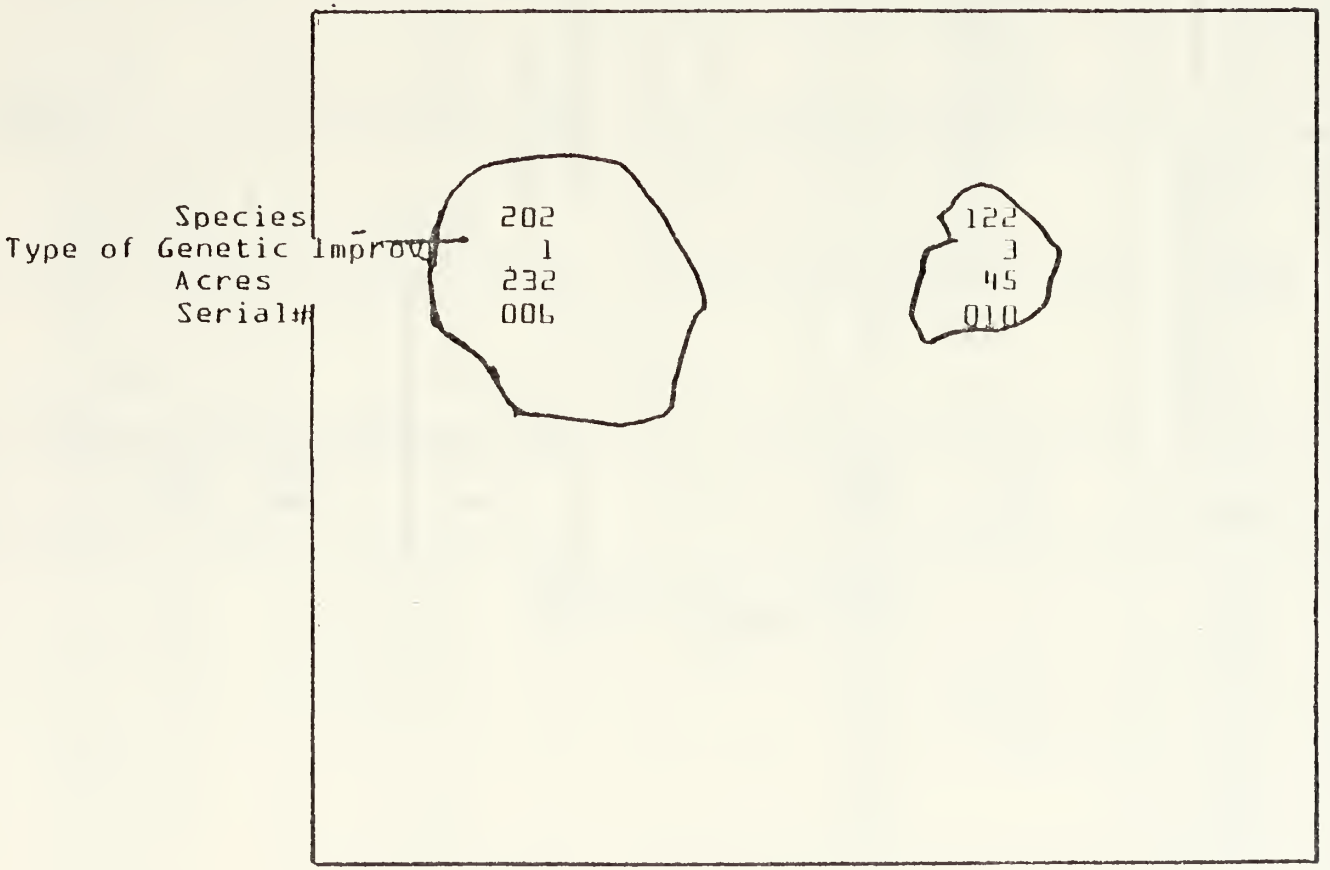
Species
Serial number
Type of Genetic improvement
Acres

LEGEND:

Location - Township, Range & Section
Line Type
Scale

REMARKS:

Recommended Areas for Planting Improved Trees



Legend

Scale: 1" = xxx'
Line Type = ____
Stand

Location: TWS, Range, Section UTM State Plane Coordinates, etc.

FR-161

RECOMMENDED
IMPROVED TREE PLANTING ACREAGE

PLANNING UNIT 0100-1075	SPECIES 0151-6100	TYPE IMPROV. 0151-5867	ACRES 0100-6520		SPECIES	TYPE IMPROV.	ACRES		SPECIES	TYPE IMPROV.	ACRES	UNIT TOTALS
#1	202	1	232		122	3	45					277
#2	117	2	22									22
#3	122	3	37									37
TOTAL ACRES												336

FR-162

FO-30

Prog. Area: 151
Prep. By: R. Hanson
Date: 8 August 77

FO-31

OUTPUT DESCRIPTION
Page 1 of 2

OUTPUT TITLE: Stand Improvement Opportunites

OUTPUT FORM: Printouts, Tables, Maps, Data Display, Graphic Display

OUTPUT DESCRIPTION: This output gives all the acreages of opportunities to improve the timber stand. It does not include reforestation or replanting.

USER(s): Foresters
Area Managers
State Office Forestry

LOCATION(s): District
State

USAGE: Could be used to locate areas of needed treatment, calculate future budget requirements, and plan future operations.

ACCESS LIMITATIONS: None.

RESPONSE TIMES: DESIRED: REQUIRED:

See Response Times - General

FREQUENCY OF PRODUCTION: Once a month per district with an intensive forestry program. Approximately 15 districts.

DEPENDENCIES: None.

REQUEST PARAMETERS: Township (100-1695); Range (100-1699); Section (100-2501); County, etc. (100-0546); Planning Unit (100-1075); Area, Resource (100-0418); Coordinates, UTM (0100-7515); Forest Type, Existing Stand (0151-5766); Birth Date, Stand (0151-5812); Size Class, Stand (0151-5810); Size Class Type, Stand (0151-5875); Stocking Class, Stand (0151-5770); Master Unit (0100-5891).

Fo-31

OUTPUT DESCRIPTION
Page 2 of 2

OUTPUT TITLE: STAND IMPROVEMENT OPPORTUNITIES

SORT ORDER: Identical to sequence of request parameters

ESTIMATED VOLUME: Numerous maps, detailed printouts

COMPUTATIONS/PROCESSES:

ACCURACY: ± 5% on Maps

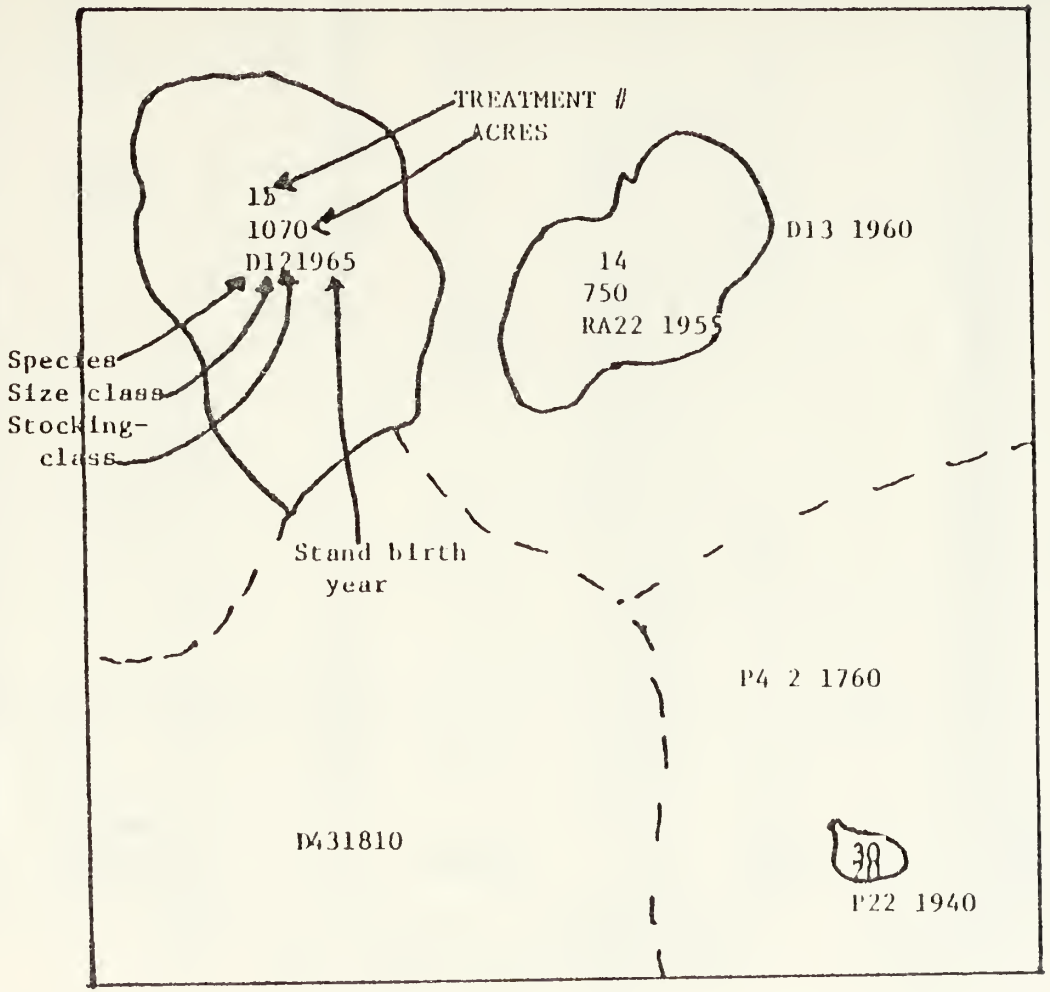
SCALE: 1"=1,000' to various other scales

ANNOTATIONS: Treatment code, acres, type, size class, stocking class, birth year, stand serial #

LEGEND: Legend
Scale: 1" = XXXX' or 1" = XM1.
Location Information
Line Type

REMARKS: Could be a high use item in forest management assuming the ability to locate the treatment areas, overlay with other types of information and calculate acreages.

STAND IMPROVEMENT OPPORTUNITIES



Scale: 1"=XXXX'
Line Type ---- Stand Boundary
——— Stand Improvements opp.
Location TWP, RGE, Section, UTM,
State Plane coor, ETC...

FO-31

STAND IMPROVEMENT OPPORTUNITIES

(100-1075) (0151 5835)

PLANNING UNIT	PRE COMM. THINNING	RELEASE	PRUNING	STAND CONV	UNIT TOTALS
#1					
TREATMENT #	11	14	30	14	--
ACRES	225	450	20	750	1445
#2					
TREATMENT#		15			
ACRES		1070			1070
#3					
TREATMENT#	11	17			
ACRES	800	345			1145
TOTALS	1025	1865	20	750	3660

FR-166

Prog. Area: 151
Prep. By: R.E. Hans
Date: 8-3-77

FO-32

OUTPUT DESCRIPTION
Page 1 of 2

OUTPUT TITLE: Acres of Harvest Opportunities

OUTPUT FORM: Table or overlay

OUTPUT DESCRIPTION: Acreages of various types of harvesting operations which yield saleable material.

USER(s): District foresters
Area managers
State office planning & budgeting

LOCATION(s): District
State Office

USAGE: Allows a check of the various opportunities available to the manager. Acreage in conjunction with volumes per acre allows estimation of total volumes.

ACCESS LIMITATIONS: None.

RESPONSE TIMES: DESIRED: REQUIRED:

See Response Times - General

FREQUENCY OF PRODUCTION: Approximately once a month per district with a substantial sales program. Approximately 20 districts.

DEPENDENCIES: None.

REQUEST PARAMETERS: Township (100-1695); Range (100-1699); Section (100-2501), County, etc. (100-0546); Planning Unit (100-1075); Area, Resource (100-0418); Site Class Type, Stand (0151-5926); Site Class, Stand (0151-5751); Size Class Type, Stand (0151-5875); Size Class Stand (0151-5810); Forest Type, Existing Stand (0151-5766); Master Unit (0100-5891).

F-32

OUTPUT DESCRIPTION
Page 2 of 2

OUTPUT TITLE: ACRES OF HARVEST OPPORTUNITIES

SORT ORDER: Identical to sequence of request parameters

ESTIMATED VOLUME: one page tabulation - numerous overlays and printouts

COMPUTATIONS/PROCESSES:

ACCURACY: ± 5% overlays ± acreages

SCALE: 1"=1,000' to other scales desired by user

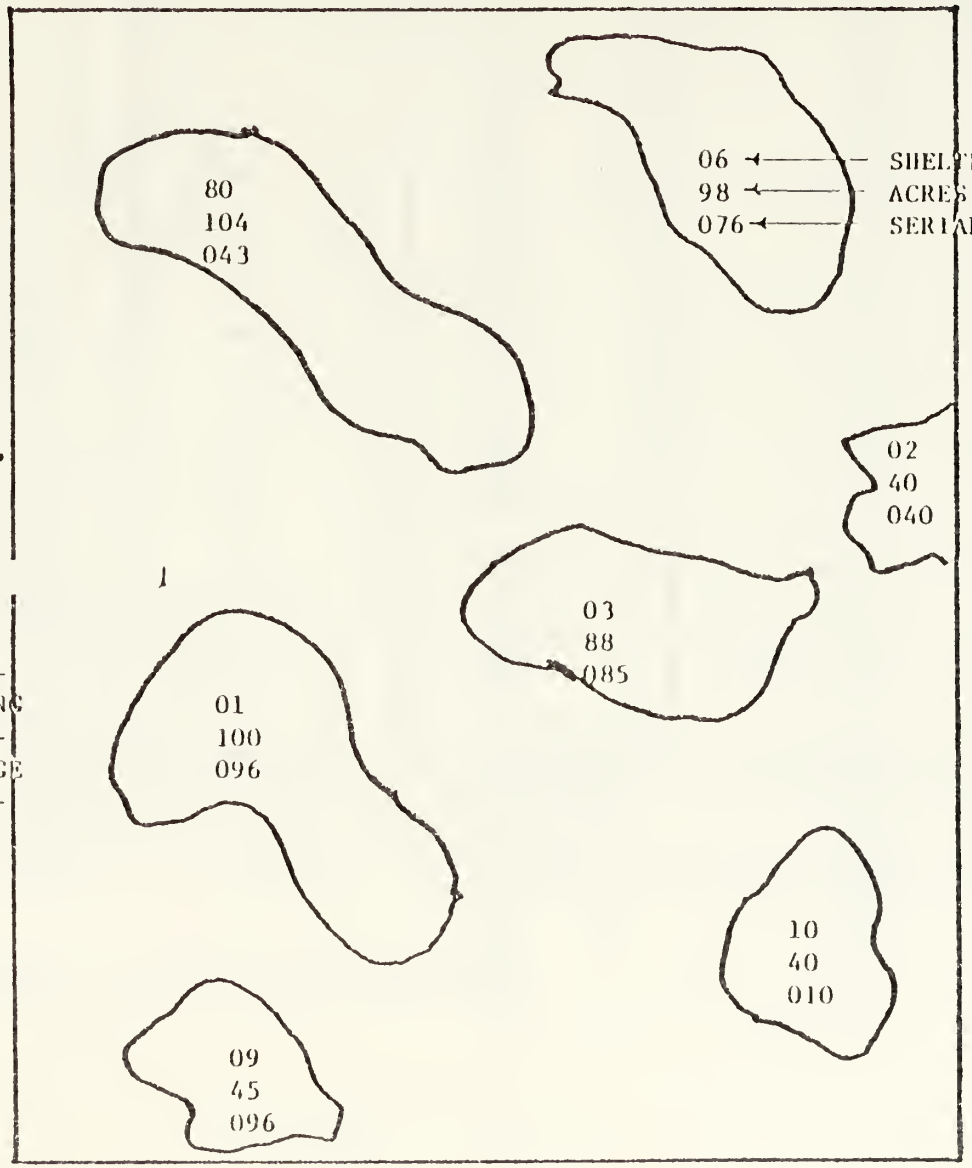
ANNOTATIONS: Harvest method code
Acreage
Stand #
Others as needed

LEGEND: Location
Scale
Line type
Explanation of codes

REMARKS:

FO-32

TIMBER HARVEST OPPORTUNITIES



LOCATION: TOWNSHIP, RANGE, SECTION, UTM, ETC...

SCALE 1"=5000'
LINE TYPE
OPPORTUNITIES
HARVEST TYPES
08=SEED TREE
10=COMMERCIAL THINNING
01= CLEAR CUT
03= MORTALITY SALVAGE
06= SHELTERWOOD
09= SELECTIVE

FR-169

Acres of Harvest Opportunities

F-32

Harvest Types	Planning Units (100-1075)				Harvest Type Totals
	I	II	III	IV	
Seed Tree (08)	xxxx	xx	xx	xxx	xxxx
Clear Cut (01)	xx	xxx	xx	x	xxx
Shelterwood (06)	--	xx	--	--	xx
Commerical Thinning (10)	xxx	xx	--	--	xxx
Mortality Slavage (03)	--	xx	--	--	xx
Selective (09)	xxxx	xxx	xx	xxx	xxxx
Unit Total	xxxx	xxxx	xxx	xxxx	xxxxx

FR-170 (0151-5835)

Prog. Area: 151
Prep. By: R. Hanson
Date: 8-10-77

FO-33

OUTPUT DESCRIPTION
Page 1 of 2

OUTPUT TITLE: Forest Protection Opportunities 2.4.6

OUTPUT FORM: Table, Overlay, Data Display, Graphic Display

OUTPUT DESCRIPTION: A table of areas requiring specific treatments to protect the existing forest resource.

USER(s): District Forestry Personnel
Area Managers

LOCATION(s): District Office
State Office
Area Office

USAGE: Locate and determine the extent (acreage) of various protection treatments. Used to locate areas and calculate total costs.

ACCESS LIMITATIONS: None.

RESPONSE TIMES: DESIRED: REQUIRED:

See Response Times - General

FREQUENCY OF PRODUCTION: Twice a year per district with forest or woodland acreage. Approximately 60 districts.

DEPENDENCIES: None.

REQUEST PARAMETERS: Township (100-1695); Range (100-1699); Section (100-2501); County, etc. (100-0546); Planning Unit (100-1075); Area, Resource (100-0418); Forest Type, Existing Stand (0151-5766); Master Unit (100-5891).

OUTPUT TITLE: Forest Protection Opportunities 2.4.6

SORT ORDER: Identical to sequence of request parameters.

ESTIMATED VOLUME: One table - numberous listings and maps

COMPUTATIONS/PROCESSES:

ACCURACY: ±5%

SCALE: 1" = 1,000' to other scales as needed

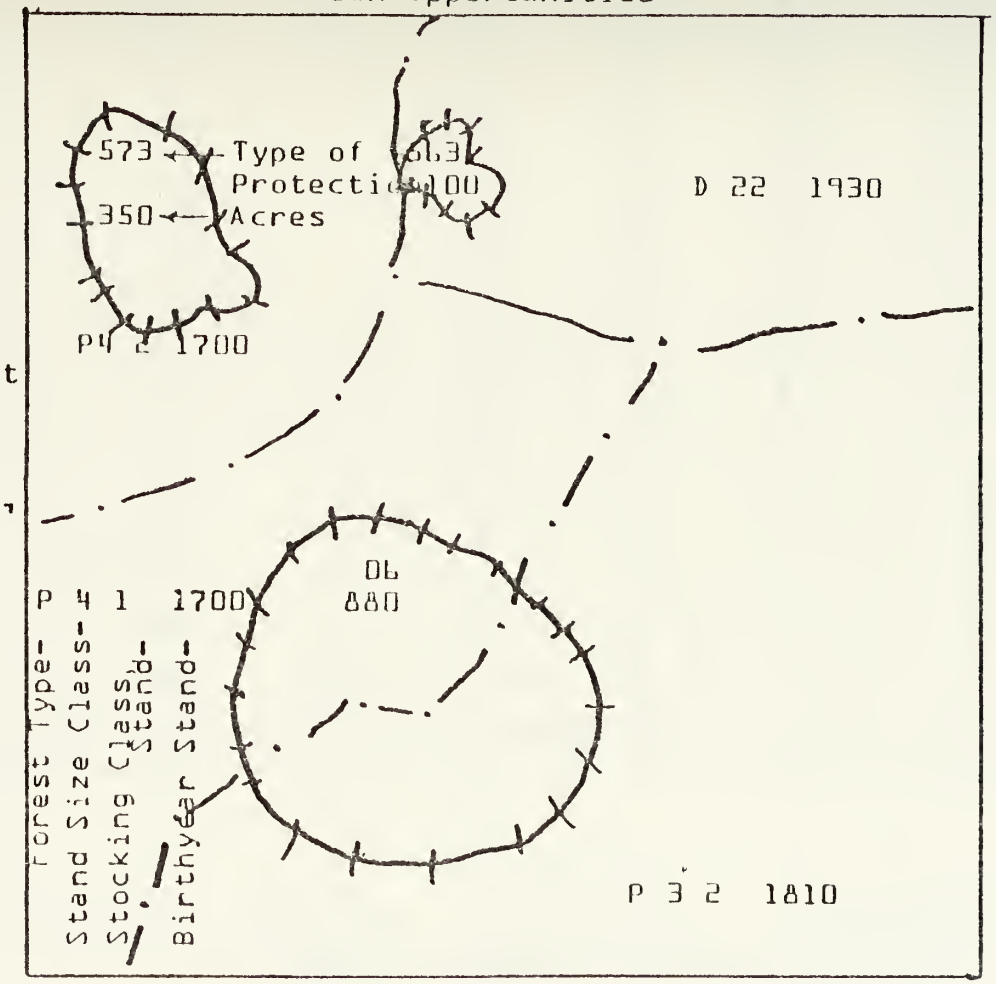
ANNOTATIONS: Type of protection
Acreage

LEGEND: Scale
Line type
Location (township, range, section, UTM, State)
Plane Coor.

REMARKS:

Forest Protection Opportunities

FO33



Legend

Scale: 1"=xxxx' or x M

Line Type ////// Forest Protection recomm.

_____·_____ Forest Type Boundary

Location Information: Township, Range, Section, UTM, State Plane Coor., Lat. and Long., Etc.

FR-173

FOREST PROTECTION OPPORTUNITIES

FO-33

Planning Unit 0100-1075	Damaging Agent-Existing or Potential								Unit Totals
	Fire 0151-5835	Insects 0151-6025		Diseases 0151-5835	Reforestion Protection 0151-5833		Animals 0151-6023		
	Acres	Type	Acres	Acres	Code	Acres	Code	Acres	
Unit Number 1	1,750	01	435	200	04	54	08	60	2,499
Unit Number 2	350	01	880	100	07	20	03	20	1,370
Unit Number 3	---	03	1,000	---	--	--	--	--	1,000
Totals	2,100		2,315	300		74		80	4,869

FR-174

F. Inputs

This section contains a description and a sample f
each input required for this program area.

FI-1

Prog. Area: 0151
Prep. By: Hayes
Date: 27 July 77

DATA SOURCE DESCRIPTION
(DATA BASE MAINTENANCE)

TITLE/DESIGNATION: BLM PHOTO POINT SAMPLE RECORD

FORM: Field Notes

DESCRIPTION: This form is completed once every 10 years or so for photo points in the course of the extensive inventory. This form will serve as the initial input form for SVIM forestry information.

PREPARATION RESPONSIBILITY: Inventory Forester DSC, or OSO

FORMAT: attached

DATA ENTRY PROCEDURE: To be determined

FREQUENCY OF UPDATE: Every 10 years, with input forms being submitted over a period of approximately 3 years.

VOLUME OF UPDATE: 138,000/update over 3-year period

ARCHIVING REQUIREMENTS: If data changes, move old data to history and record new data. Keep historical data for 50 years.

ACCESS LIMITATIONS: None

SPECIAL EDIT/AUDIT/VALIDATION REQUIREMENTS: See edit program L-201

REMARKS:

FI-1

BLM PHOTO SAMPLE RECORD

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

Page ___ of ___

CONTROL

1 TRANSACTION CODE 6196
2 TYPE OF PHOTO RECORD 5714
3 SERIES 5711
4 INVENTORY UNIT 5708

AREA IDENTICATION

5 STATE ADM 0004
6 DISTRICT 0643
7 RESOURCE AREA 0418
8 PLANNING UNIT 1615
9 SUB UNIT 5707
10 MASTER UNIT 5891
11 SURVEY UNIT 5892
12 STATE GEO. 0640
13 COUNTY 0546
14 UTM ZONE 7615

OTHER

15 SUSTAINED YIELD UNIT 6105
16 NO. OF LINES 5712
17 DATE 6630 (YR MO DAY)
18 INTERPRETER NAME 5709
19. BLM FOREST OWNER 5703

REMARKS

DI EDIT

PHOTO IDENTIFICATION

5713

SYMBOL	ROLL NO	PHOTO NO	POINT NUMBER
XXXX	XXX	XXX	XXX

LOCATION

STAND NO STATE + SWA NO. 3507	STAND ACRES 6620	UTM COORDINATE 7615 NORTHERLY	UTM COORDINATE 7615 EASTERLY
XXXX	XXXX	XXXXXX	XXXXXX

PHOTO INTERPRETATION

PHOTO LAND USE 6101	TREES VEG TYPE & SUBTYPE 2706	TREES DENSITY 6610	TREES AVE CROWN DIA. 6004	TREES AVERAGE HEIGHT 5709	SHRUBS VEG. TYPE & SUBTYPE 2706	SHRUBS DENSITY 6610	SHRUBS AVE. CROWN DIA. 3522	SHRUBS AVE. HEIGHT 5004	GRASS & FORBS VEG. TYPE & SUBTYPE 2706	GRASS & FORBS DENSITY 6610	GRASS & FORBS AVE. CROWN DIA 3522	GRASS & FORBS AVE. HEIGHT 5004	LAND FORM 5182
XX	XXXX	XXX	XX	XXX	XXXX	XXX	XX	XX	XXXX	XXX	XX	XX	XXX

AUXILIARY DATA

ASPECT	SLOPE 5706	PHYSIO. 6747	ELEVATION HUND. OF FEET 0421	PAST SEDM TREATMENT	TYPE & YIELD	% & YIELD	SOIL UNIT 4683	5718 MAP QUAD CODE	5721
X	X	X	XXX	XXX	X	XX	XXXX	XX XXX	XXX X XXXX
0139-3515									
0122-3504									
XXX	XXX								

FR-177

FI-2

Prog. Area: 0151
Prep. By: Hayes
Date: 27 July 77

DATA SOURCE DESCRIPTION
(DATA BASE MAINTENANCE)

TITLE/DESIGNATION: BLM FOREST INVENTORY SAMPLE RECORD

FORM: Field Notes (2 forms)

DESCRIPTION: This form is completed for field sample plots in the extensive inventories approximately once every 10 years.

PREPARATION RESPONSIBILITY: Inventory Forester DSC, Oregon State Office

FORMAT: Attached

DATA ENTRY PROCEDURE: To be determined

FREQUENCY OF UPDATE: Every 10 years, with input forms being submitted over a period of approximately 3 years.

VOLUME OF UPDATE: 11,000/update (three year period)

ARCHIVING REQUIREMENTS: If data changes, move old data to history and record new data. Retain historical data for 50 years.

ACCESS LIMITATIONS: None

SPECIAL EDIT/AUDIT/VALIDATION REQUIREMENTS: See edit program L-220

REMARKS:

March BUREAU OF LAND MANAGEMENT BLM FOREST INVEN[illegible] PLOT LOCATION

AREA IDENTIFICATION 14

70 INVENTORY UNIT 5705
4 LOCATION NO 6110
96 ACTION 3
5. SAMPLE KIND 5893 1
6 DATE OF SURVEY 6630 (YR MO DAY)

AREA CLASSIFICATION 15 — 37

8. GROUND LAND USE 6111
56 FOREST TYPE 2706
57. STAND SIZE 6151
54 STAND AGE 6152
75 BAF 6137
76. BAS 6142
53a ASPECT 6523
53b SLOPE 5746
53c. PHYSIOGRAPHY 5747
55. SEED SOURCE 5865
19a. AGE TO BH 6134
97. NO LINES 5712

P.I. DATA

1. STATE 0690
2. SURVEY UNIT 5892
3 COUNTY 0546
7 PI LAND USE 6102
10. OWNER CLASS 5872
11 BEM DIST 0543
12. P.U. 1075
95 ELEVATION 0431
77 FIELD CREW
LEADER
ASS'T

PLOT LOCATION

71. RP to PLOT (Sp. DBH Az. Dist.)
72. POINT 1 REFERENCE (Sp DBH Az. Dist)
1.
2
81. PHOTOS Scale
Symbol 5713 Roll
Photo Nos
86 LEGAL DESCRIPTION
T. 1685 R 1699 Sec 2506
Meridian 1703
87 DECLINATION

79. TEN POINT LAYOUT

EDIT
83 FIELD 6525
84 OFFICE 6525

80. GENERAL STATEMENT

MAP QUAD

FR-179

TREE IDENTIFICATION 8 — 22 | **TREE MEASUREMENT** 23 — 42 | **TREE CLASSIFICATION** 43 — 77 | **REMARKS**

POINT NO 15 x	TREE NO 16 xxx	AZIMUTH 13 xxx	DISTANCE 14 xx x	TREE HISTORY 17 xx	SPECIES 18 xxx	D.B.H. 19 xxx.x	BARK THICKNESS 45 xxx	10 YEAR RAD GRO. 20 xxx	TREE AGE @ B.H 37 xxx	TOTAL HEIGHT 21 xxx	MERCH HEIGHT 23 xxx	LOG GRADE 26 x	LIVE / DEAD SURFACE DEFECT 27 xx	CROWN RATIO 31 x	CROWN CLASS 32 x	DAMAGE-CAUSE OF DEATH 33 xx	SEVERITY 33a xx	LOG DEDUCTION CODE 51 — 70 (xx LOG POSITION / x TYPE DEFECT / xx % DEDUCTION) 42 xxxxx	42 xxxxx	42 xxxxx	42 xxxxx	TREE OR COVER CLASS 34 xx	ADDITIONAL SEED-SAPS xx	SITE INDEX 73 xxx	REMARKS
6113	6114	3515	6112	6115	6100	6116	6135	6117	6128	6118	6187	6120	6121	6122	6123	6124	6126					6125	6189	6136	

FI-2 (10-72)

FI-2 (2 of 2)

PAGE 2 OF 2

PLOT LOCATION

71 RP TO PLOT — SP. | DIST. | AZ. | DIST.

72 POINT REFERENCE — SP. | DIST. | AZ | DIST.
1.
2.

73 6 POINT LAYOUT

81 PHOTOS — SCALE / ROLL / PHOTO NOS

88 LEGAL DESCRIPTION: T 16 4S R 16 4 E SEC. 2506 MERIDIAN 1703

77 FIELD CREW — ESTIMATOR — RECORDER

87 DECLINATION

ROUTE TO RP AND REMARKS

EDIT — 83 FIELD | 84 OFFICE

LOG DEDUCTION CODES 42

73 SITE TREES

	1	2	3
SPECIES XXX	6100		
DBH XXX	6002		
AGE XXX	6000		
HEIGHT XXX	6001		
SITE XXX	6136		

LINE NUMBER	
POINT NUMBER	6113
TREE NUMBER	6114
AZIMUTH	3315
DISTANCE	6112
TREE HISTORY	6115
SPECIES	6100
PAST DBH	5897
PRESENT DBH	6116
DBH INCREMENT	6117
TOTAL HEIGHT	6118
CROWN RATIO	6123
CROWN CLASS	6122
DAMAGE/ CAUSE OF DEATH	6124
AGE GROUP	5898
RISK CLASS	5902
MISTLETOE	6126
CLUMPS	5894
STAND CONDITION	5897
COVER CLASS	6125
NUMBER OF LOGS	6119

SURVEY UNIT	5892
COUNTY	0546
SAMPLE KIND	5898
DATE OF CURRENT SURVEY	6 6
DATE OF PAST SURVEY	5894
LAND STATUS	
OWNERSHIP	5895
PRESENT LAND USE	6111
PAST LAND USE	6111
FORM ASSOCIA	5901
SERIES	6533
COMM/HAB TYPE	6533
PHYSIO CLASS	5906
FOREST TYPE	2706
RMA	0418
LOC'N	6110
CARD TYPE	

NBR OF LINES	5712
STAND AGE	0152
SITE INDEX	5750
SITE CLASS	5908
ELEVATION	0491
BAS	6142
BAF	6137

FI-3

Prog. Area: 0151
Prep. By: Horak
Date: 3 Aug 77

DATA SOURCE DESCRIPTION
(DATA BASE MAINTENANCE)

TITLE/DESIGNATION: BLM SIMMIX Input Forms

FORM: Forest Management and Forest Inventory Code Sheets

DESCRIPTION: Seventeen printed forms on 23 pages. One set of input data required for each forest simulation allowable cut run.

PREPARATION RESPONSIBILITY: DSC or O.S.O. Allowable Cut Specialist

FORMAT: (See attached forms)

DATA ENTRY PROCEDURE: To be determined at a later date

FREQUENCY OF UPDATE: New allowable cuts and program updates are normally developed with each 10 year reinventory, or as needed when major changes in MFPs or the resource base occurs.

VOLUME OF UPDATE: Six to twelve allowable cut alternatives are developed for each of the 17 public domain forest inventory units and approximately the same for the 16 Master Units in Western Oregon.

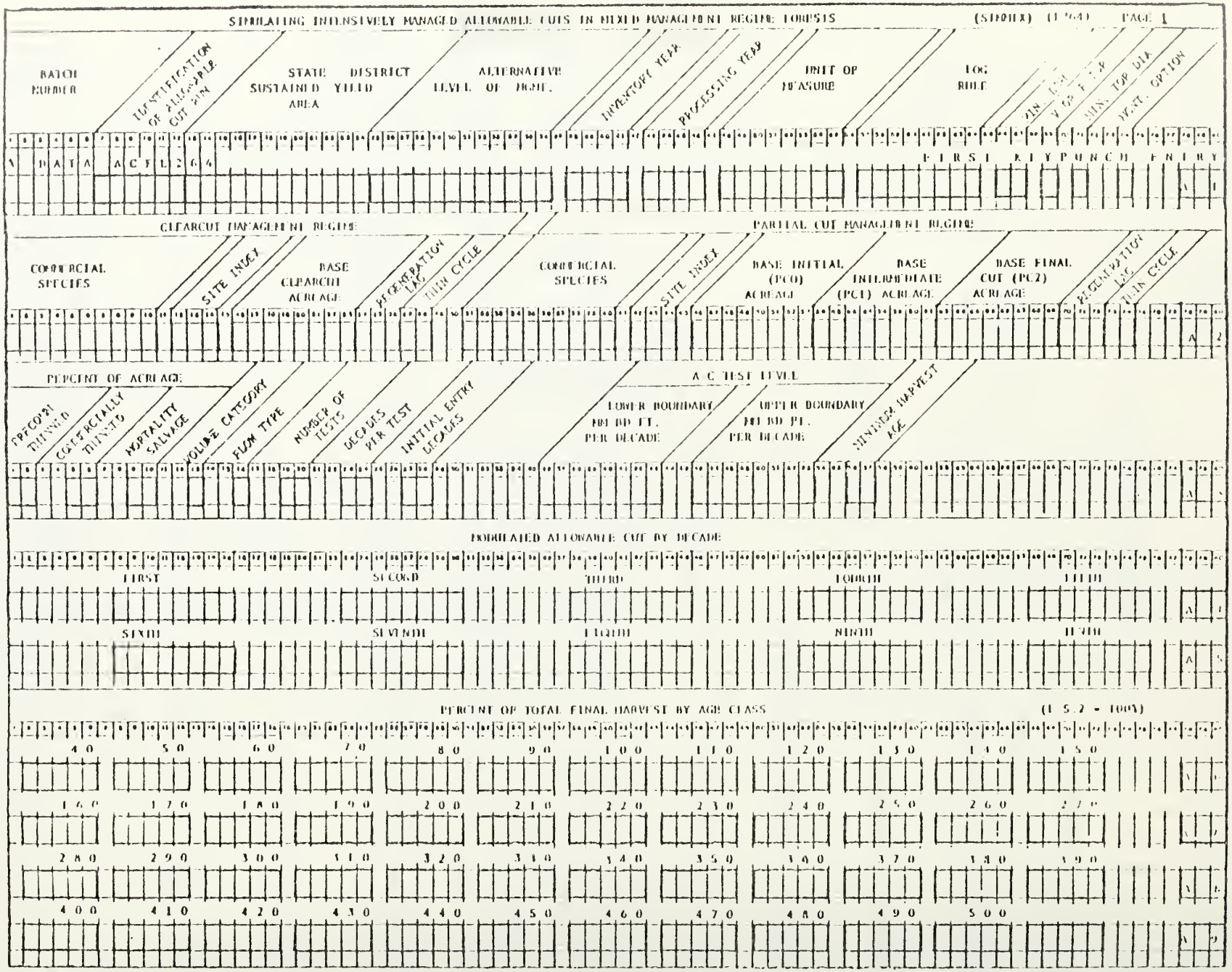
ARCHIVING REQUIREMENTS: Keep final allowable cut selection data for 50 years. Current data is a legal commitment in Western Oregon and an administrative decision in public domain states. Update when new data base is prepared.

ACCESS LIMITATIONS: Access limited to Allowable Cut Specialists.

SPECIAL EDIT/AUDIT/VALIDATION REQUIREMENTS: Refer to Edit Program (L-260, L-261, L264)

REMARKS: Original SIMAC program is explained in USFS Technical Report PNW-1 1972, Bergsvic, Holt, and Sassaman. The program has been revised several times since 1972 and now has the capability to simulate growth and yields on forests to be managed by both clear-cutting and shelterwood harvest methods simultaneously. Input data obtained from various sources: 1) forest inventory data base records; 2) growth and yields from projections by silviculturists; 3) Management levels from State Offices; 4) Local mgmt. decisions and multiple use restrictions from Districts (URA & MFP).

FI-3


SIMULATING INTENSIVELY MANAGED ALLOWABLE CUTS IN MIXED MANAGEMENT REGIME FORESTS (SIMFIX) (1964) PAGE 1
BATCH NUMBER
IDENTIFICATION OF ALLOWABLE CUT RUN
STATE DISTRICT SUSTAINED YIELD AREA
ALTERNATIVE LEVEL OF MGMT.
INVENTORY YEAR
PROCESSING YEAR
UNIT OF MEASURE
LOG RULE
MIN. DIA. FOR V OR F TOP
MIN. TOP DIA
MGMT. OPTION
DATA ACFL264
FIRST KEYPUNCH ENTRY
CLEARCUT MANAGEMENT REGIME:
COMMERCIAL SPECIES
SITE INDEX
BASE CLEARCUT ACREAGE
REGENERATION LAG
TURN CYCLE
PARTIAL CUT MANAGEMENT REGIME:
COMMERCIAL SPECIES
SITE INDEX
BASE INITIAL (PC0) ACREAGE
BASE INTERMEDIATE (PC1) ACREAGE
BASE FINAL CUT (PC2) ACREAGE
REGENERATION LAG
TURN CYCLE
PERCENT OF ACREAGE
PRECOMM THINNED
COMMERCIALLY THINNED
MORTALITY SALVAGE
VOLUME CATEGORY
FIRM TYPE
NUMBER OF TESTS
DECADES PER TEST
INITIAL ENTRY DECADES
A/C TEST LEVEL
LOWER BOUNDARY BD FT. PER DECADE
UPPER BOUNDARY BD FT. PER DECADE
MINIMUM HARVEST AGE
MODULATED ALLOWABLE CUT BY DECADE
FIRST
SECOND
THIRD
FOURTH
FIFTH
SIXTH
SEVENTH
EIGHTH
NINTH
TENTH
PERCENT OF TOTAL FINAL HARVEST BY AGE CLASS (E.G. .2 = 10%)
40 50 60 70 80 90 100 110 120 130 140 150
160 170 180 190 200 210 220 230 240 250 260 270
280 290 300 310 320 330 340 350 360 370 380 390
400 410 420 430 440 450 460 470 480 490 500

FR-182

ACCRETION AND-OR DEPLETION OF BASE FOREST ACREAGE
ACRES(%) BY DECADE NUMBER

FI-3

TWO THREE FOUR FIVE SIX SEVEN EIGHT NINE TEN

YIELD EQUATIONS: FOR STANDS LESS THAN 100 YEARS OLD
YIELD = ± A ± B (AGE) ± C (AGE^2) (I 15. Dec. Pt. Required)
(Variable Integer)

COEF A COEF B COEF C

STAND PROJECTIONS
BY TREATMENT CATEGORY

UNTREATED STANDS
NORTALITY SALVAGE
PRE-COMM THIN ONLY
THINNABLE 90 YR AGE CLASS
THINNABLE 80 YR AGE CLASS
THINNABLE 70 YR AGE CLASS
THINNABLE 60 YR AGE CLASS
THINNABLE 50 YR AGE CLASS
THINNABLE 40 YR AGE CLASS
THINNABLE 30 YR AGE CLASS
(PRE-COMM THIN COMM THIN

YIELD EQUATIONS: FOR STANDS 100 YEARS OLD AND OLDER
Y = ± A ± B (AGE) ± C (AGE^2) (I 15.: Dec Pt. Required)
(Variable Integer Size)

COEF A COEF B COEF C

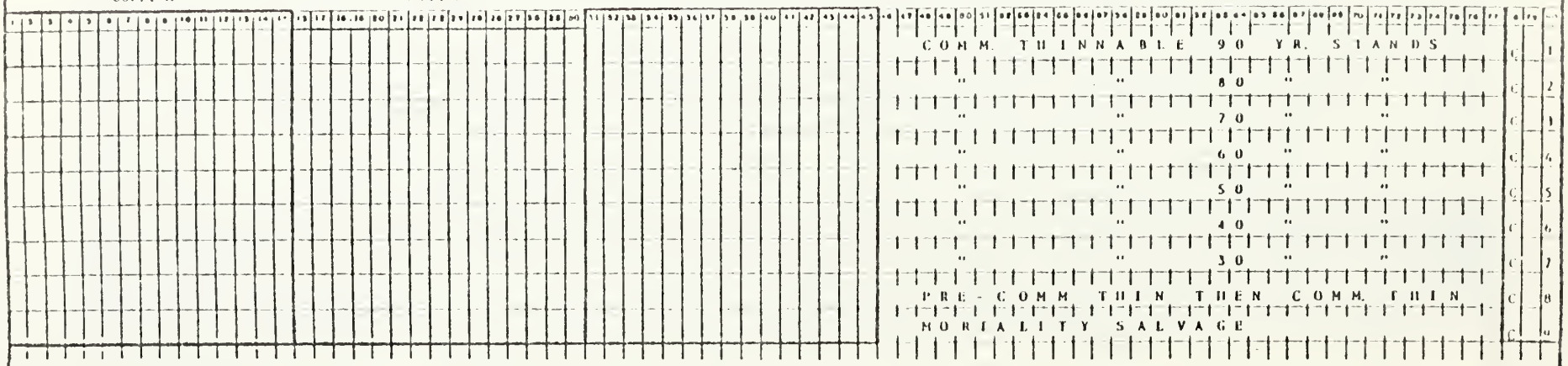
UNTREATED STANDS
NORTALITY SALVAGE
PRE-COMM THIN ONLY
THINNABLE 90 YR AGE CLASS
THINNABLE 80 YR AGE CLASS
THINNABLE 70 YR AGE CLASS
THINNABLE 60 YR AGE CLASS
THINNABLE 50 YR AGE CLASS
THINNABLE 40 YR AGE CLASS
THINNABLE 30 YR AGE CLASS
PRE-COMM THIN COMM THIN

FR-183

EQUATIONS FOR STAND GROWTH FOR STANDS
LESS THAN 100 YEARS OLD

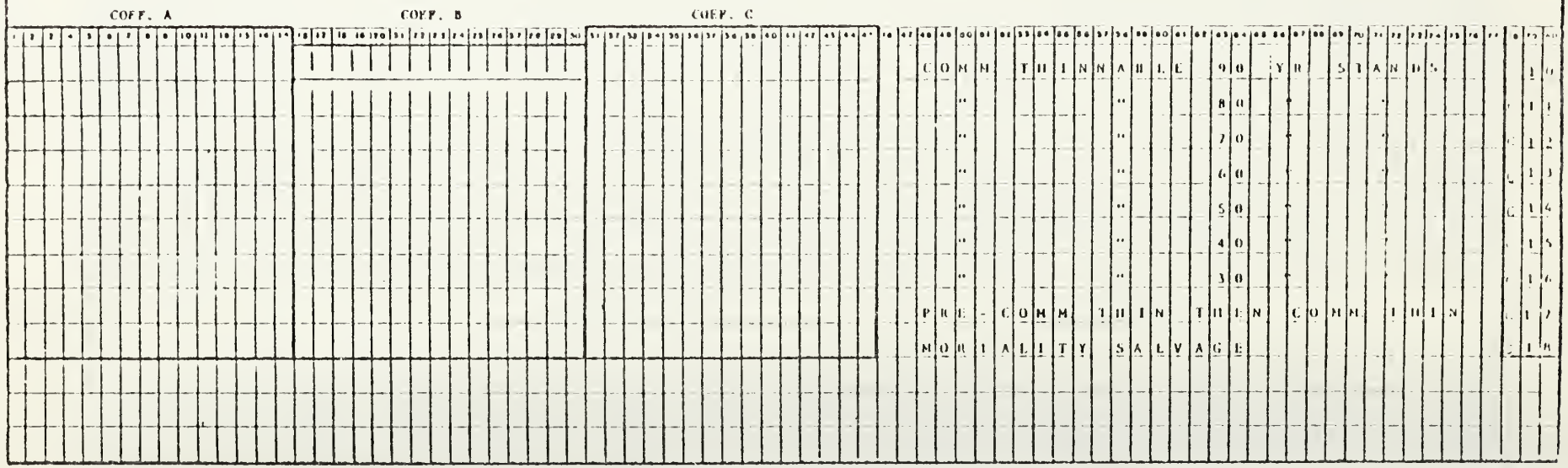
GROWTH INCREMENT = ± A ± B (AGE) ± C (AGE^2)
VARIABLE INTEGER I 15; Decimal Point Required

IT-3



EQUATIONS FOR STAND GROWTH FOR STANDS
EQUAL TO OR GREATER THAN 100 YEARS

GROWTH INCREMENT = ± A ± B (AGE) ± C (AGE^2)
VARIABLE INTEGER I 15; Decimal Point Required



FI-3

PRESENT YIELD AND GROWTH MATRIX FACTORS FOR REGENERATION STANDS

YIELD PROJECTIONS AT THE BEGINNING OF THE FIRST TEN DECADES

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Decade	Stand Age	(F 5.3)	
											20		D 1
											30		D 2
											40		D 3
											50		D 4
											60		D 5
											70		D 6
											80		D 7
											90		D 8
											100		D 9
											110		D 10
											120		D 11
											130		D 12
											140		D 13
											150		D 14
											160		D 15
											170		D 16
											180		D 17
											190		D 18

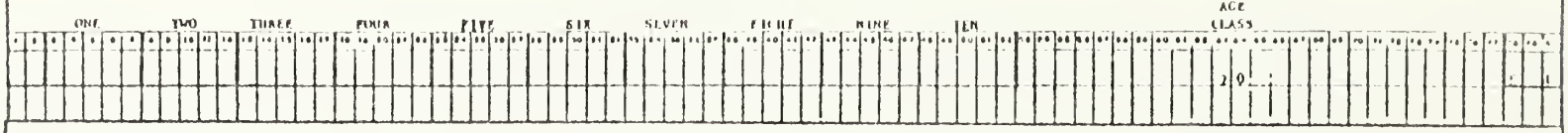
MORTALITY - SALVAGE YIELD FACTORS

PROJECTIONS AT THE BEGINNING OF THE FIRST TEN DECADES

one	two	three	four	five	six	seven	eight	nine	ten	Decade	Stand Age	(F 5.3)	
											100		D 19
											110		D 20
											120		D 21
											130		D 22
											140		D 23
											150		D 24
											160		D 25
											170		D 26
											180		D 27
											190		D 28

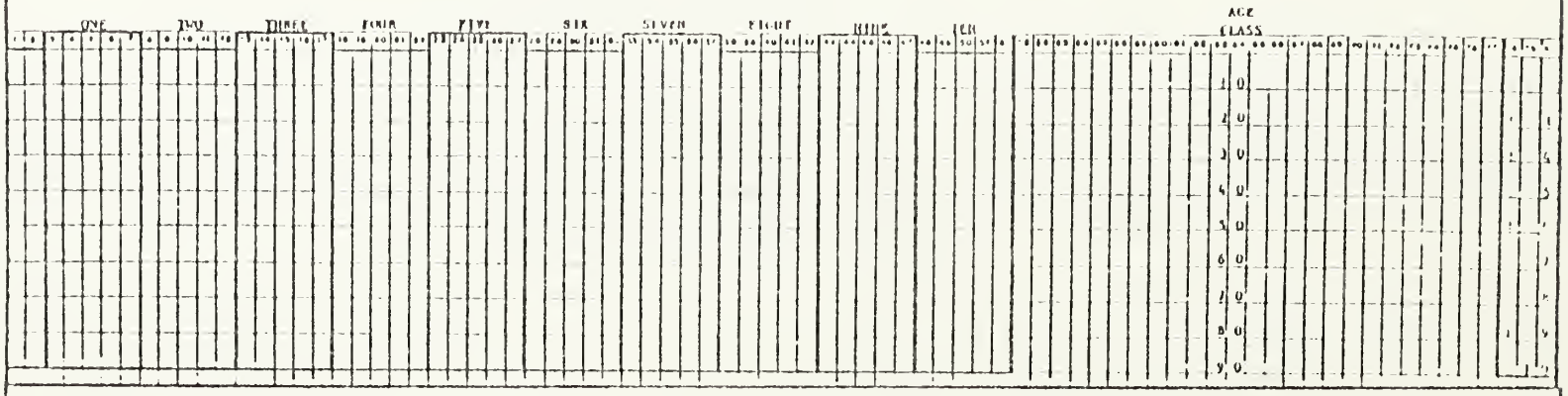
PRECOMMERCIAL THIN ONLY

PERCENT OF ACREAGE BY DECADE: 100% = 10,000



PRE-COMMERCIAL THIN FOLLOWED BY COMMERCIAL THINNING

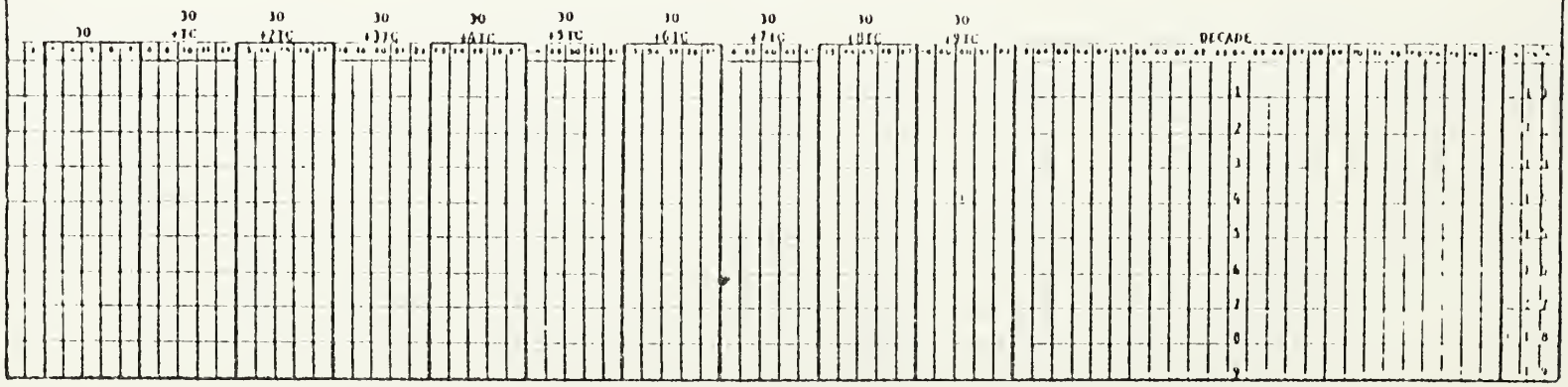
PERCENT OF ACREAGE BY DECADE: 100% = 10,000



THINNING VOLUMES IN STANDS WHICH HAVE BEEN PRECOMMERCIALLY THINNED

AGE AT WHICH COMMERCIAL THINNING BEGINS. THINNING CYCLE VARIABLE, 5 TO 15 YEAR INTERVAL

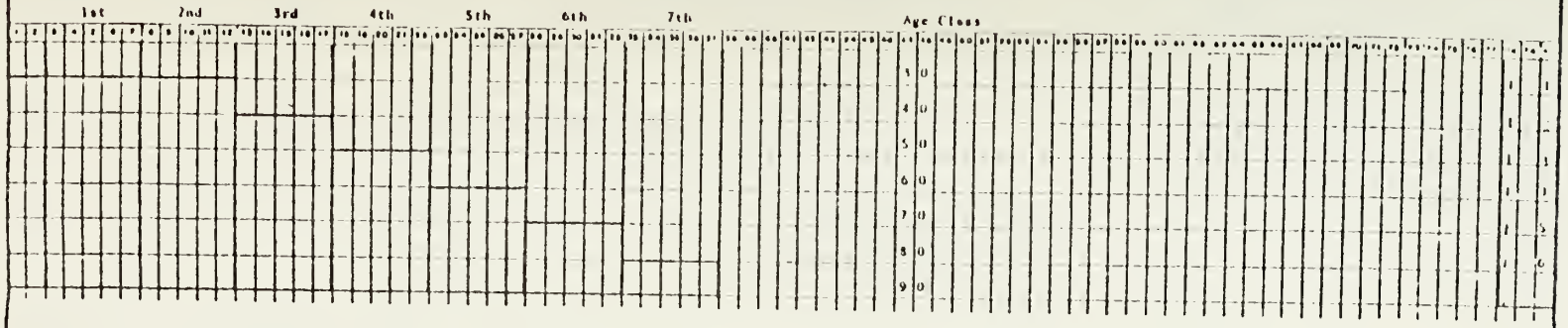
BOARD FEET : CUBIC FT : PER ACRE



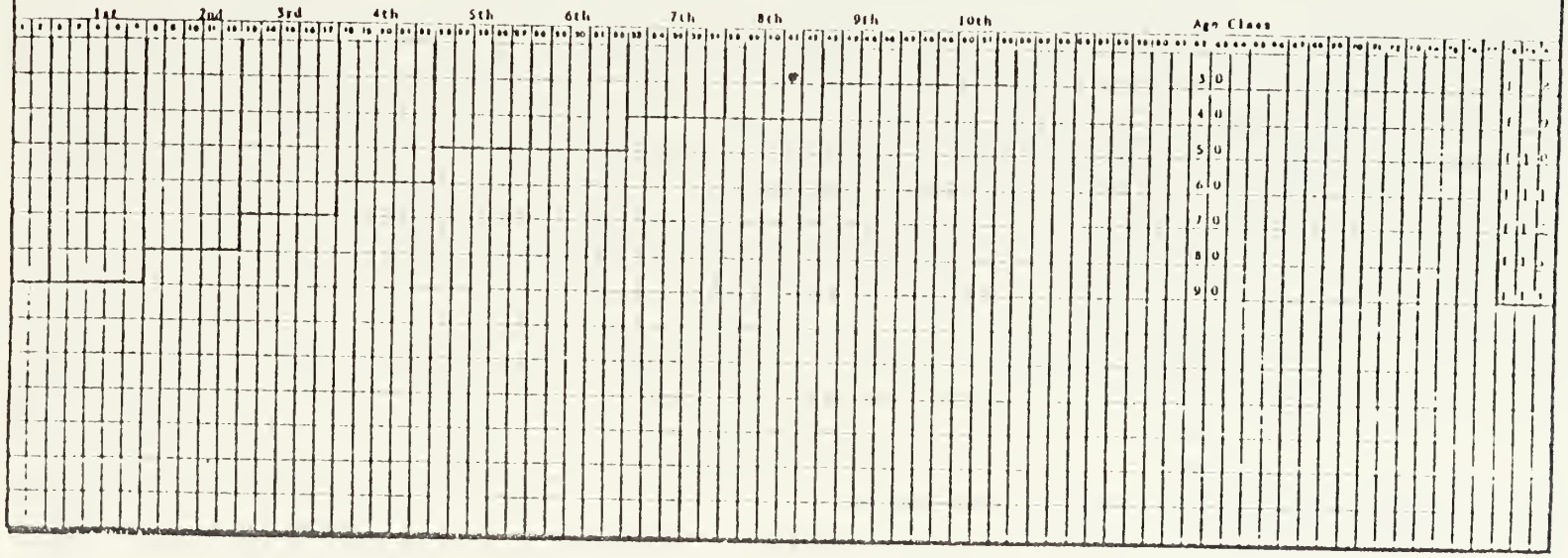
FR-186

FI-3

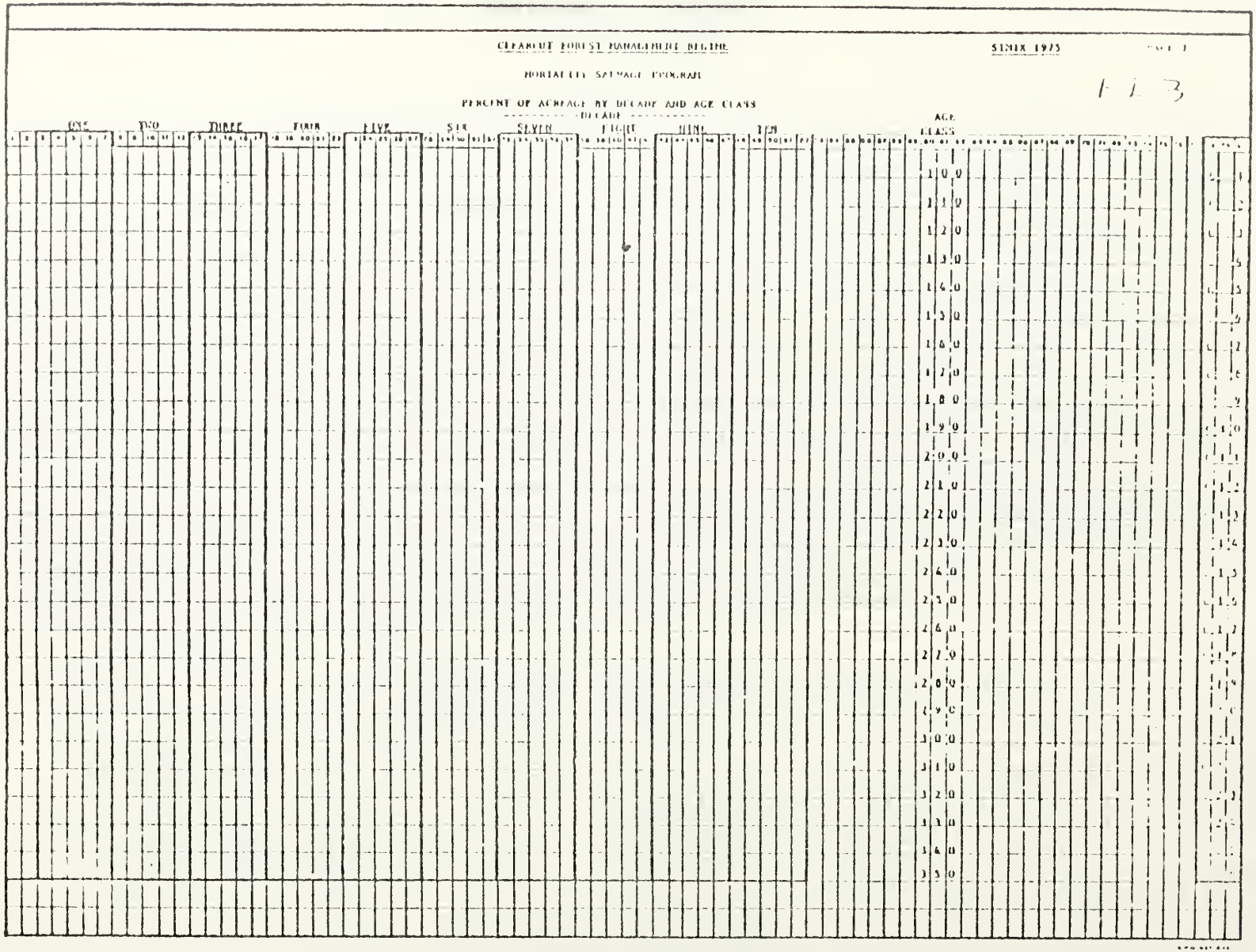
PERCENT OF INITIAL CC ACREAGE TO BE COMMERCIALLY THINNED
BY DECADE OR THINNING NUMBER



COMMERCIAL THINNING OF INITIAL STANDS BY AGE CLASS
VOLUME PER ACRE HARVESTED DURING THINNING NUMBER



FR-187


CLEARCUT FOREST MANAGEMENT REGIME
SIMIX 1975
MORTALITY SALVAGE PROGRAM
PERCENT OF ACREAGE BY DECADE AND AGE CLASS
DECADE
ONE
TWO
THREE
FOUR
FIVE
SIX
SEVEN
EIGHT
NINE
TEN
AGE CLASS

FR-188

MORTALITY SALVAGE PROGRAM CONTINUED
PERCENT OF ACREAGE BY DECADE AND AGE CLASS

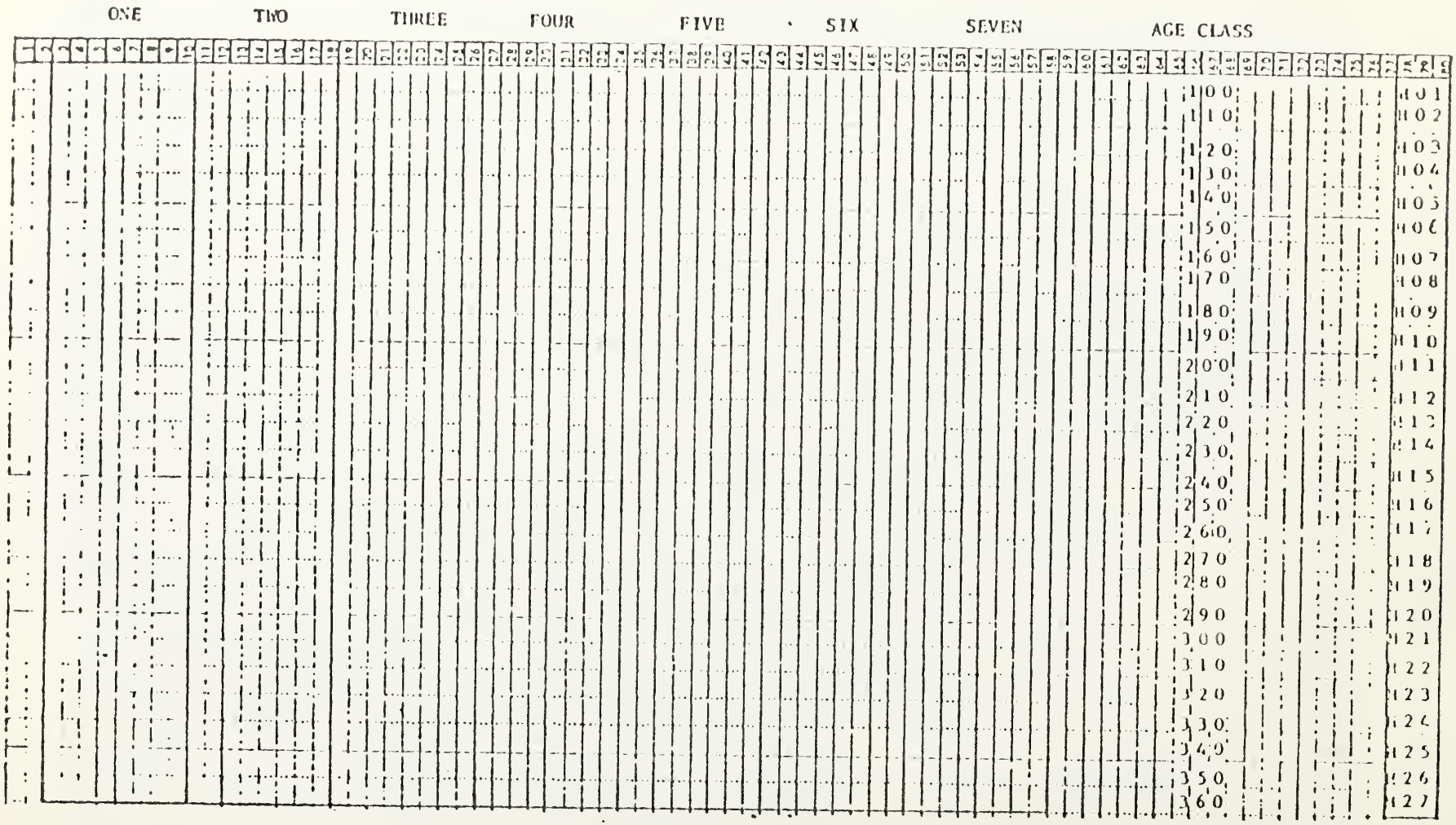
1 1 3

AGE CLASS	ONE	TWO	THREE	FOUR	FIVE	SIX	SEVEN	EIGHT	NINE	TEN
36										
37										
38										
39										
40										
41										
42										
43										
44										
45										
46										
47										
48										
49										
50										

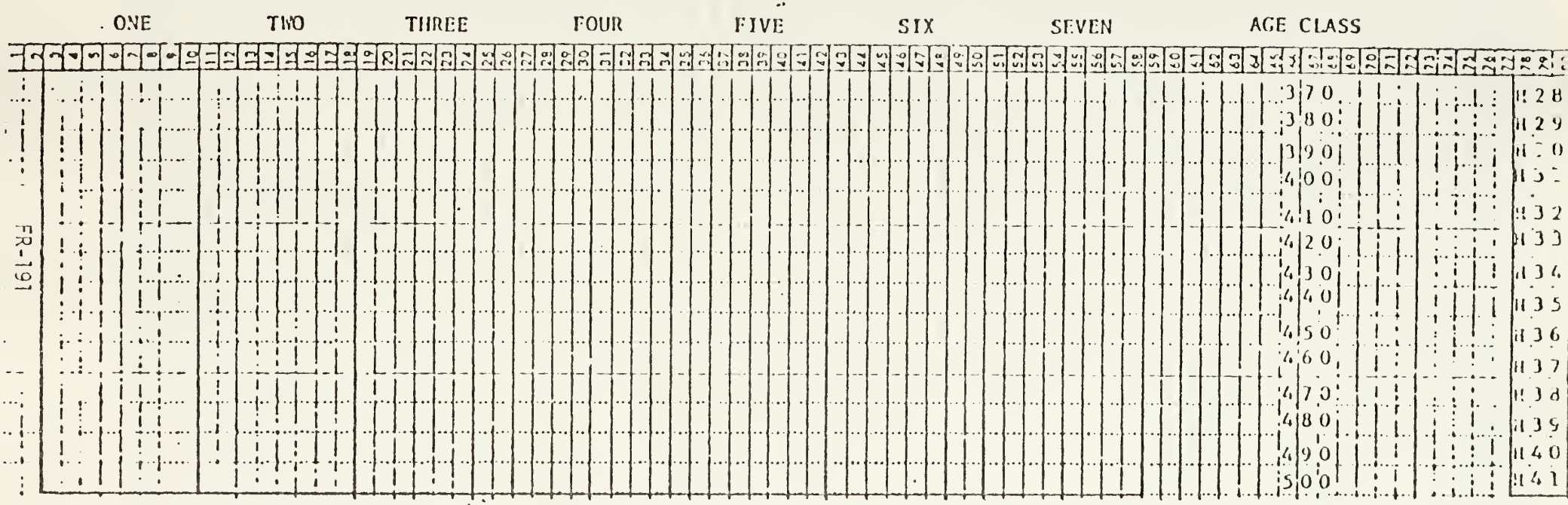
FR-189

T-3

CLEAR CUT MORTALITY SALVAGE (VOLUME BY DECADE)

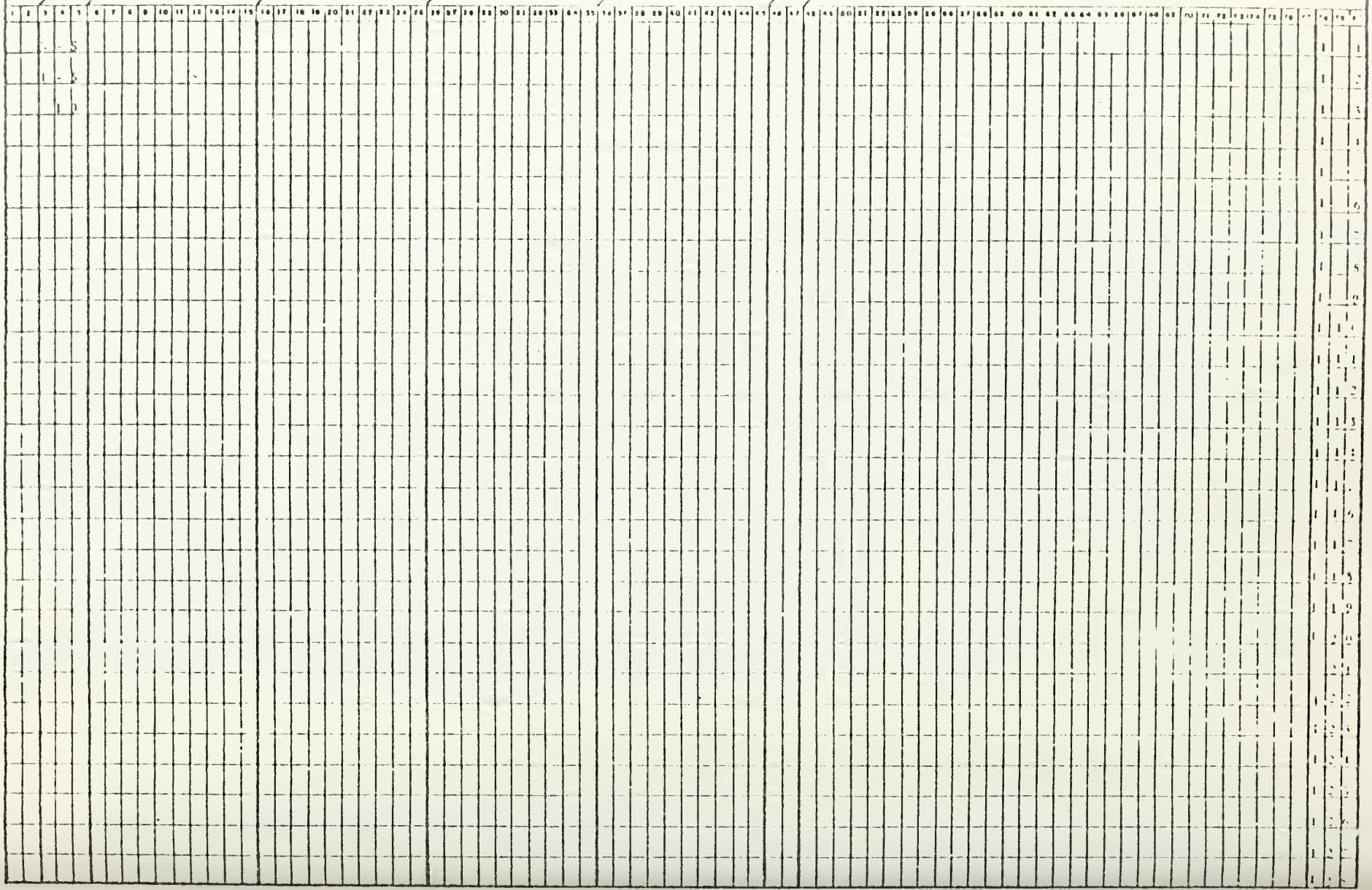


CLEAR CUT MORTALITY SALVAGE VOLUME (CONTINUED)

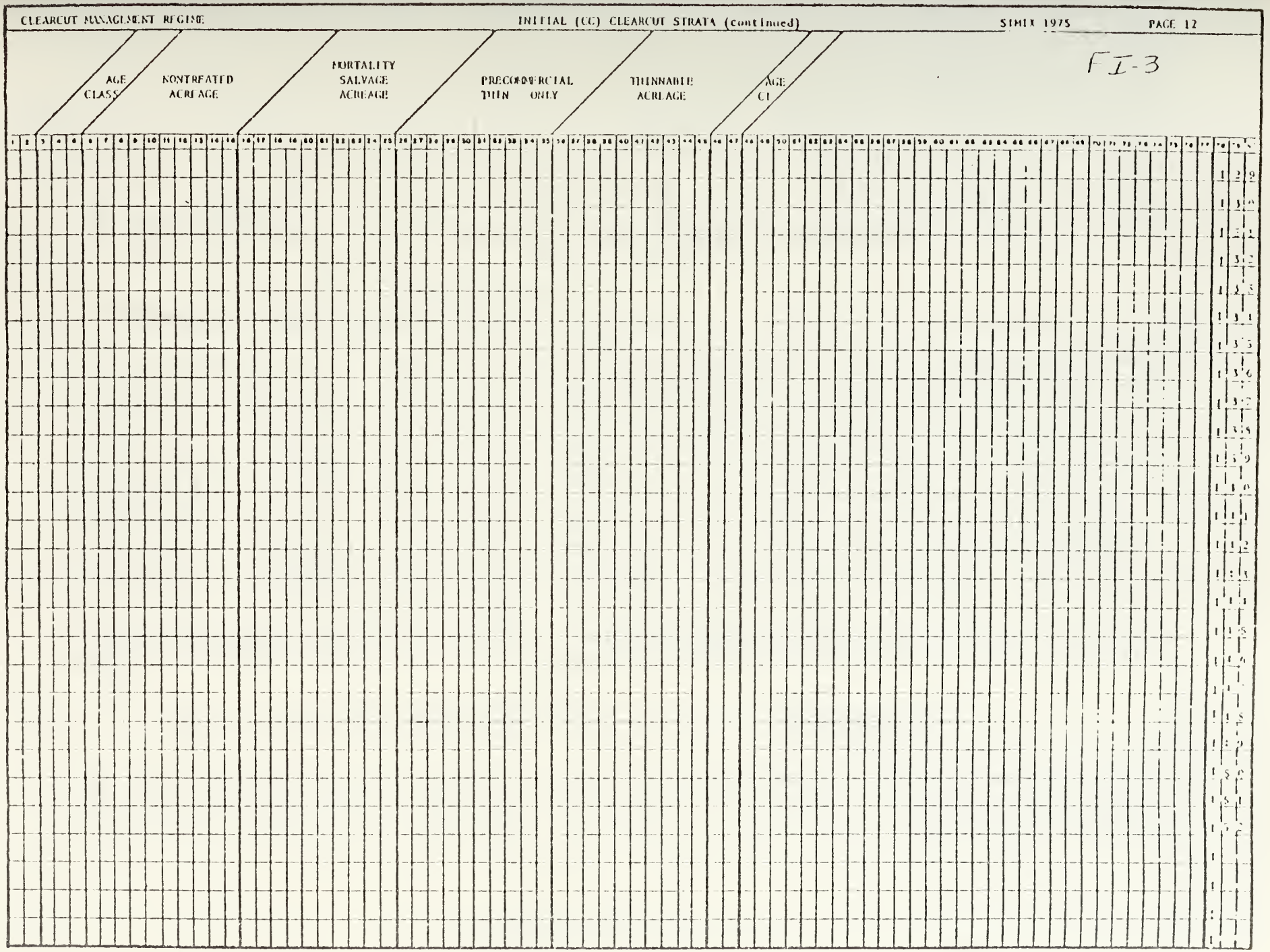


CLEARCUT MANAGEMENT REGIME — INITIAL (CC) CLEARCUT STRATA — SIMEX 1975 — PAGE 11

FI-3



FI-3


AGE CLASS
NONTREATED ACREAGE
MORTALITY SALVAGE ACREAGE
PRECOMMERCIAL THIN ONLY
THINNABLE ACREAGE
AGE CL

FT-3

ACCRETION AND/OR DELETION OF BASE FOREST ACREAGE
ACRES(±) BY DECADE NUMBER

TWO	THREE	FOUR	FIVE	SIX	SEVEN	EIGHT	NINE	TEN	
									1 1

YIELD EQUATIONS: FOR STANDS LESS THAN 100 YEARS OLD
YIELD = ± A ± B (AGE) ± C (AGE^2)   (I 15 . Dec. Pt. Required)
(Variable Integer)

STAND PROJECTIONS
BY TREATMENT CATEGORY

COEF A	COEF B	COEF C	
			NONTREATED STANDS
			PRE COMM. THIN ONLY
			THINNABLE 90 YR AGE CLASS
			THINNABLE 80 YR AGE CLASS
			THINNABLE 70 YR AGE CLASS
			THINNABLE 60 YR AGE CLASS
			THINNABLE 50 YR AGE CLASS
			THINNABLE 40 YR AGE CLASS
			THINNABLE 30 YR AGE CLASS
			PRE COMM. THIN CONMR. THIN

YIELD EQUATIONS: FOR STANDS 100 YEARS OLD AND OLDER
Y = ± A ± B (AGE) ± C (AGE^2)   (I 15.: Dec. Pt. Required)
(Variable Integer)

COEF A	COEF B	COEF C		
			NONTREATED STANDS	1 12
			PRE COMM THIN ONLY	1 13
			THINNABLE 90 YR AGE CLASS	1 14
			THINNABLE 80 YR AGE CLASS	1 15
			THINNABLE 70 YR AGE CLASS	1 16
			THINNABLE 60 YR AGE CLASS	1 17
			THINNABLE 50 YR AGE CLASS	1 18
			THINNABLE 40 YR AGE CLASS	1 19
			THINNABLE 30 YR AGE CLASS	1 20

PC1 AND PC2 YIELDS
PERCENTAGE OF REVISED PCO YIELD EQUATION

FI-3

K-ONE K TWO

EQUATIONS FOR STAND GROWTH
FOR STANDS 0 TO 99 YEARS OLD

GROWTH (INCREMENT) = ±A ± B (AGE) ± C (AGE^2)
VARIABLE INTEGER = 115

A-COEF B-COEF C-COEF INITIAL STAND AGE

```
COMM  THIN NABLE  90  YR  STANDS                K  1
COMM  THIN NABLE  80  YR  STANDS                K  2
COMM  THIN NABLE  70  YR  STANDS                K  3
COMM  THIN NABLE  60  YR  STANDS                K  4
COMM  THIN NABLE  50  YR  STANDS                K  5
COMM  THIN NABLE  40  YR  STANDS                K  6
COMM  THIN NABLE  30  YR  STANDS                K  7
PRO - COMM  THIN  THEN  COMM  THIN              K  9
```

EQUATIONS FOR STAND GROWTH
FOR STANDS 100 YEARS OF AGE AND OLDER

GROWTH (INCREMENT) = ± A ± B (AGE) ± (AGE^2)

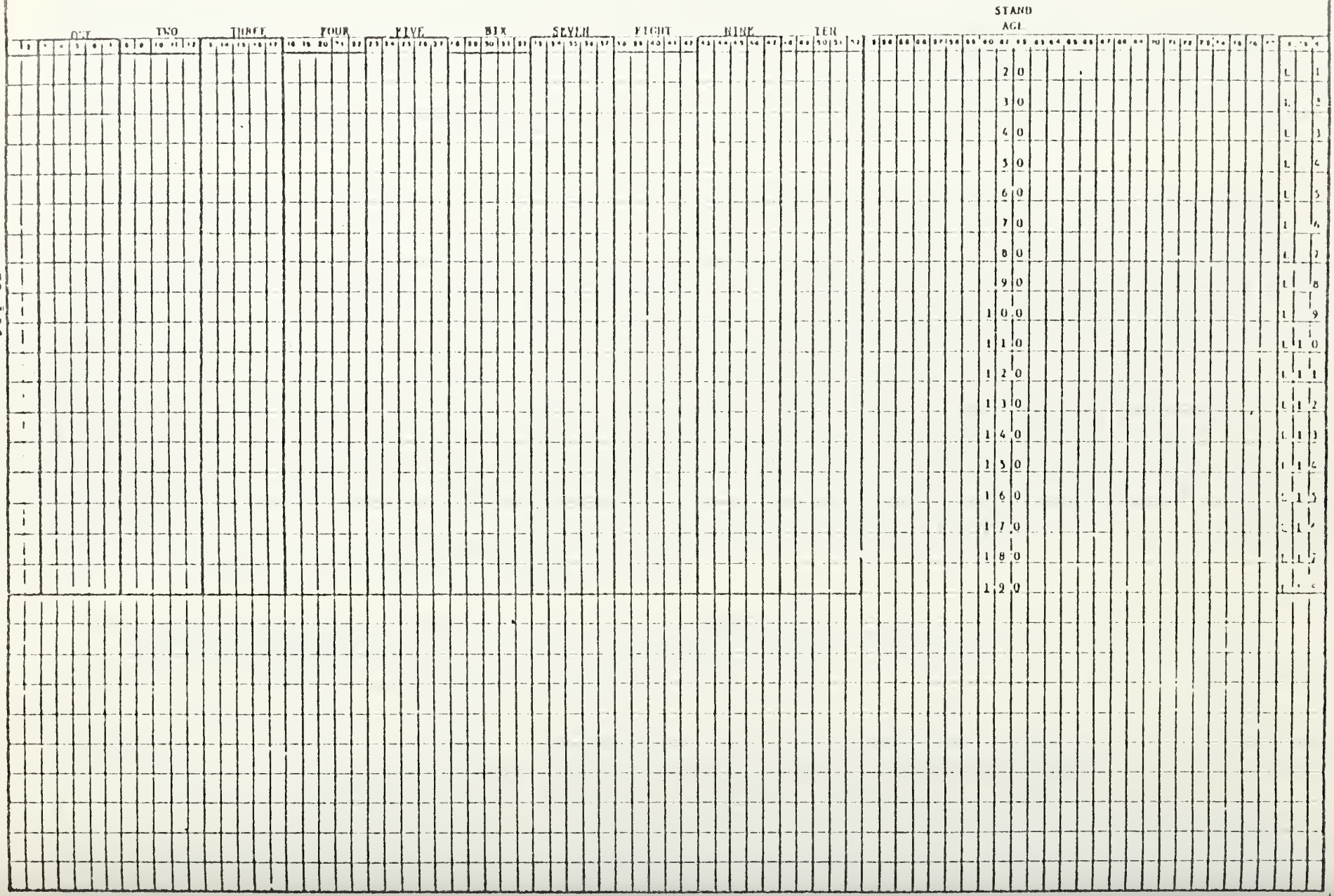
A-COEF B-COEF C-COEF INITIAL STAND AGE

```
COMM  THIN NABLE  90  YR  STANDS                K  1
COMM  THIN NABLE  80  YR  STANDS                K  2
COMM  THIN NABLE  70  YR  STANDS                K  3
COMM  THIN NABLE  60  YR  STANDS                K  4
COMM  THIN NABLE  50  YR  STANDS                K  5
COMM  THIN NABLE  40  YR  STANDS                K  6
COMM  THIN NABLE  30  YR  STANDS                K  7
PRO - COMM  THIN  THEN  COMM  THIN              K  9
```

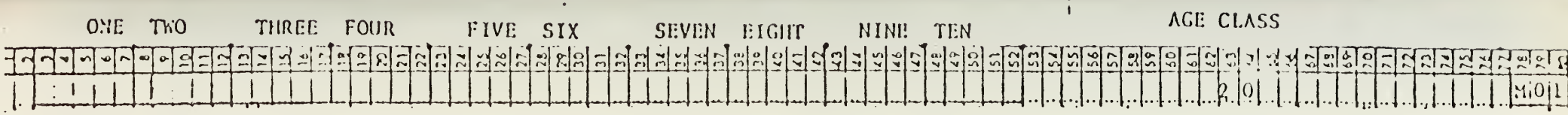
FR-195

FL-3

PROJECTION MATRIX OF PRESENT YIELD AND GROWTH
FOR NONTREATED PARTIAL CUT (PCO) FOREST STANDS

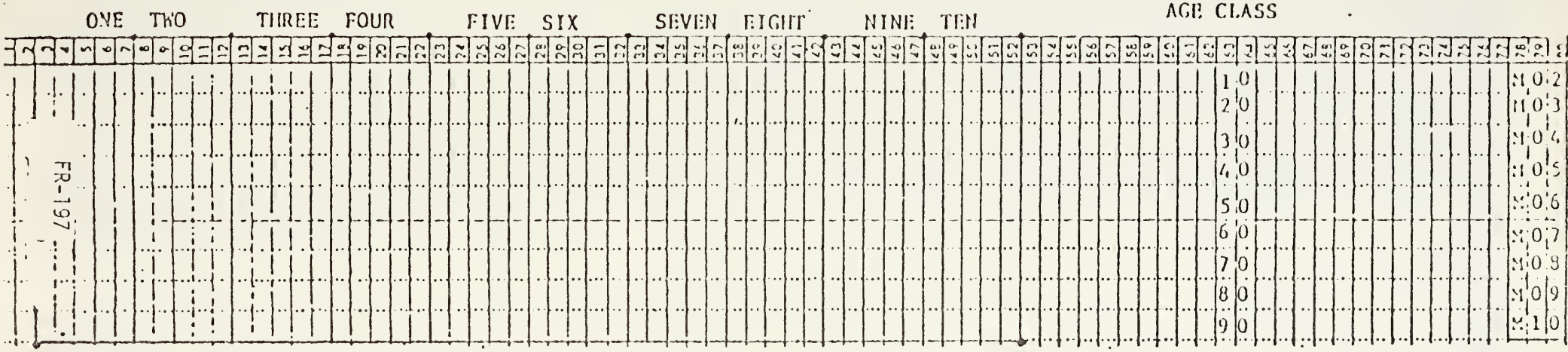


FR-196



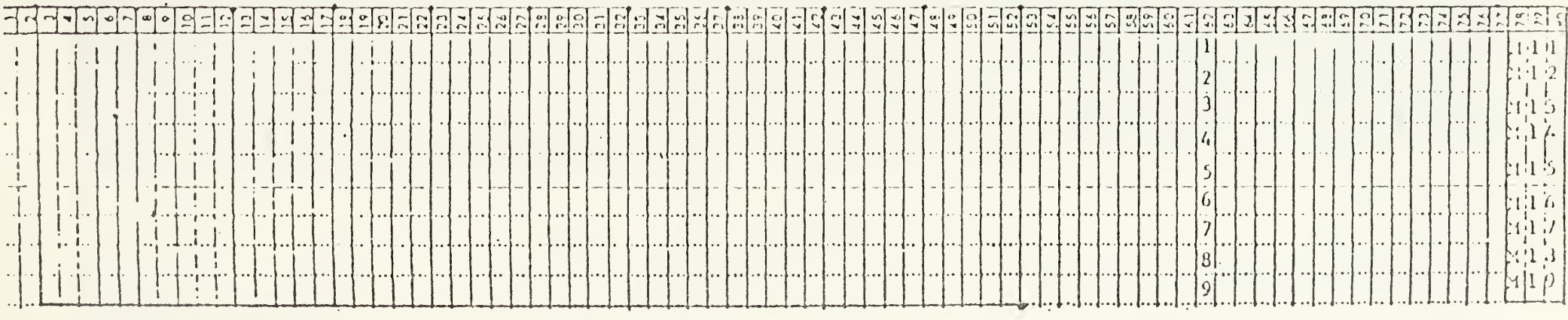
PC PRE COMMERCIAL THIN FOLLOWED BY COMMERCIAL THIN

(% BY DECADE)



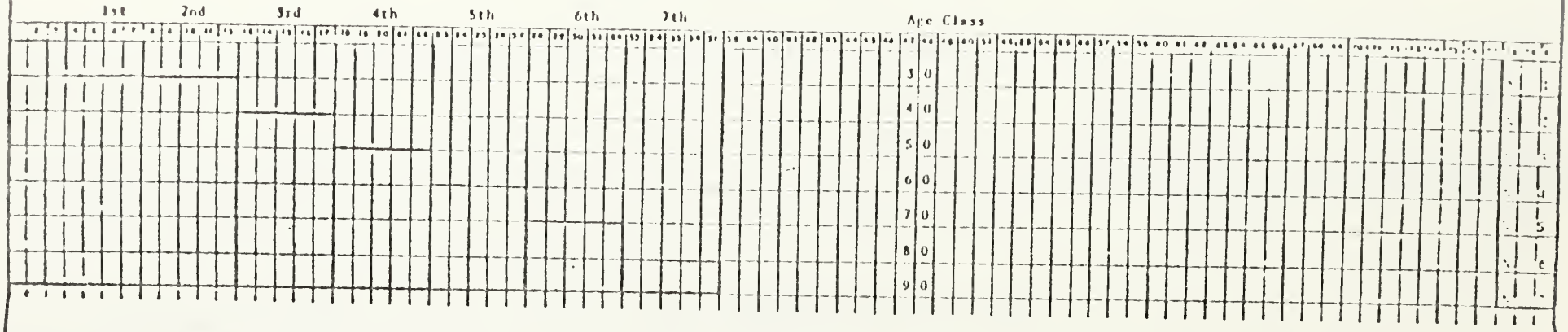
PC THINNING VOLUME IN STANDS THAT HAVE BEEN PRECOMMERCIALLY THINNED

(BY AGE THINNING BEGINS)

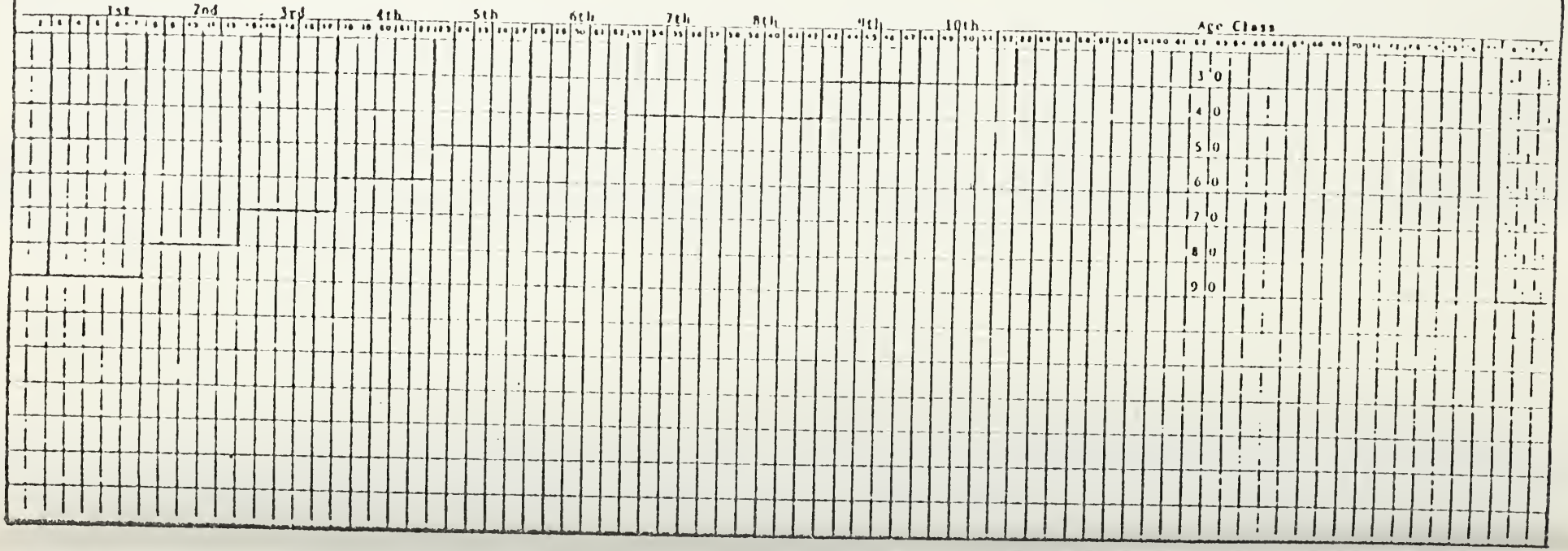


FI-3

PERCENT OF INITIAL (PCO) ACREAGE TO BE COMMERCIALLY THINNED
BY DECADE OR THINNING NUMBER

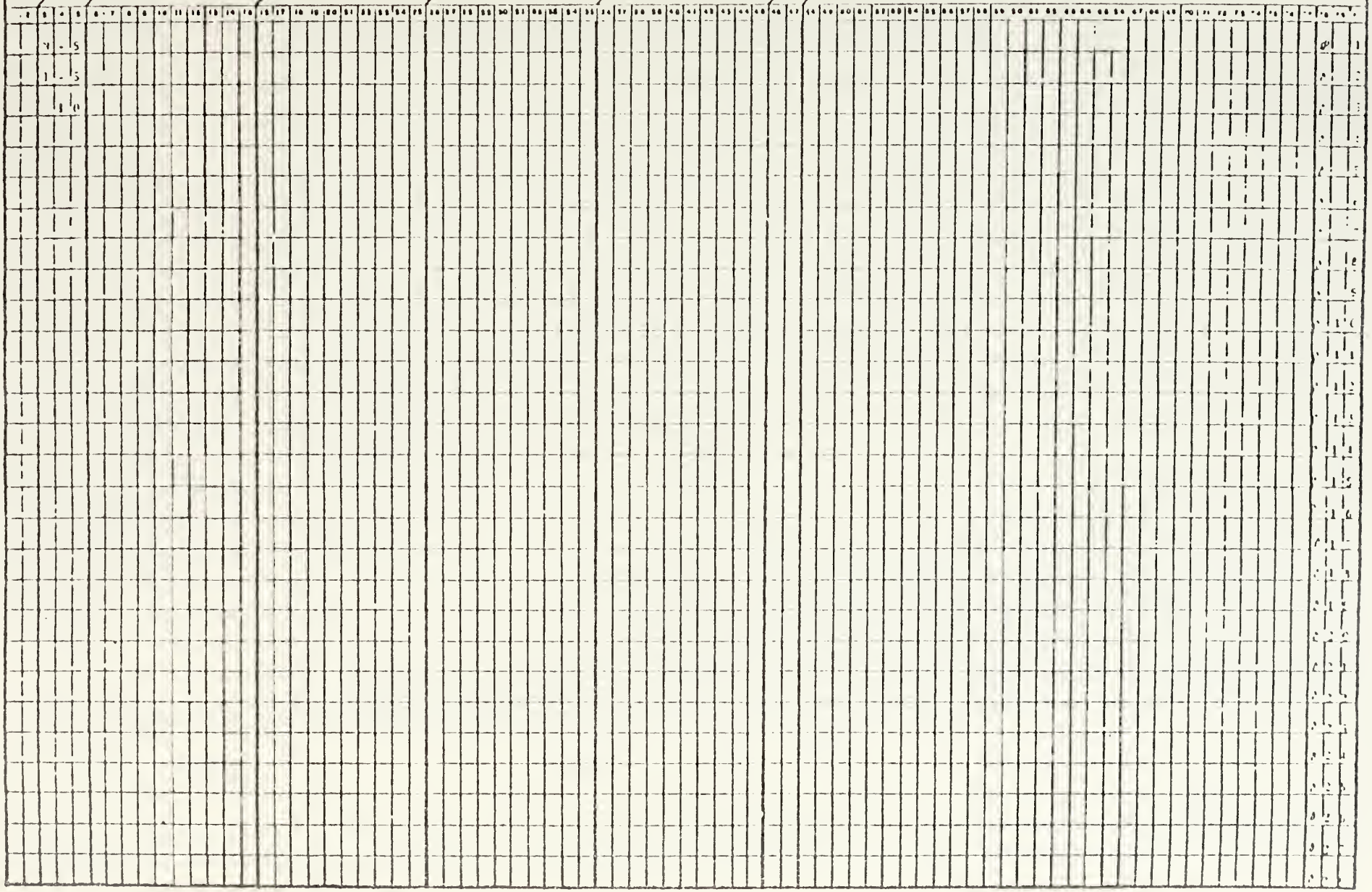


COMMERCIALL THINNING OF INITIAL (PCO) STANDS BY AGE CLASS
VOLUME PER ACRE HARVESTED DURING THINNING NUMBER



FR-198

FR-3


AGE CLASS
NONTREATED ACREAGE
PRECOMMERCIAL THIN ONLY
THINNABLE ACREAGE
AGE CT

1 E-3

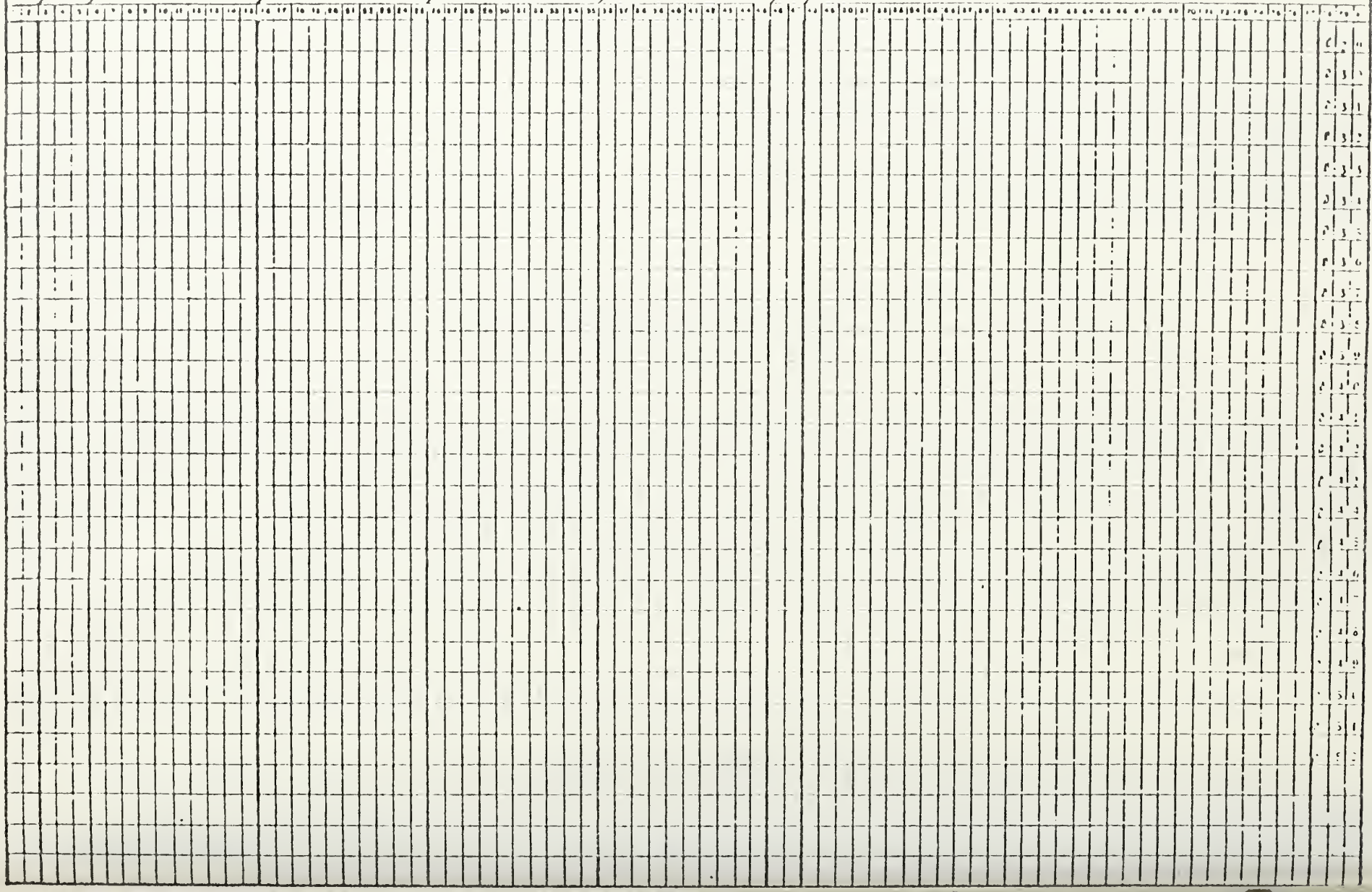
AGE CLASS

NONTREATED ACREAGE

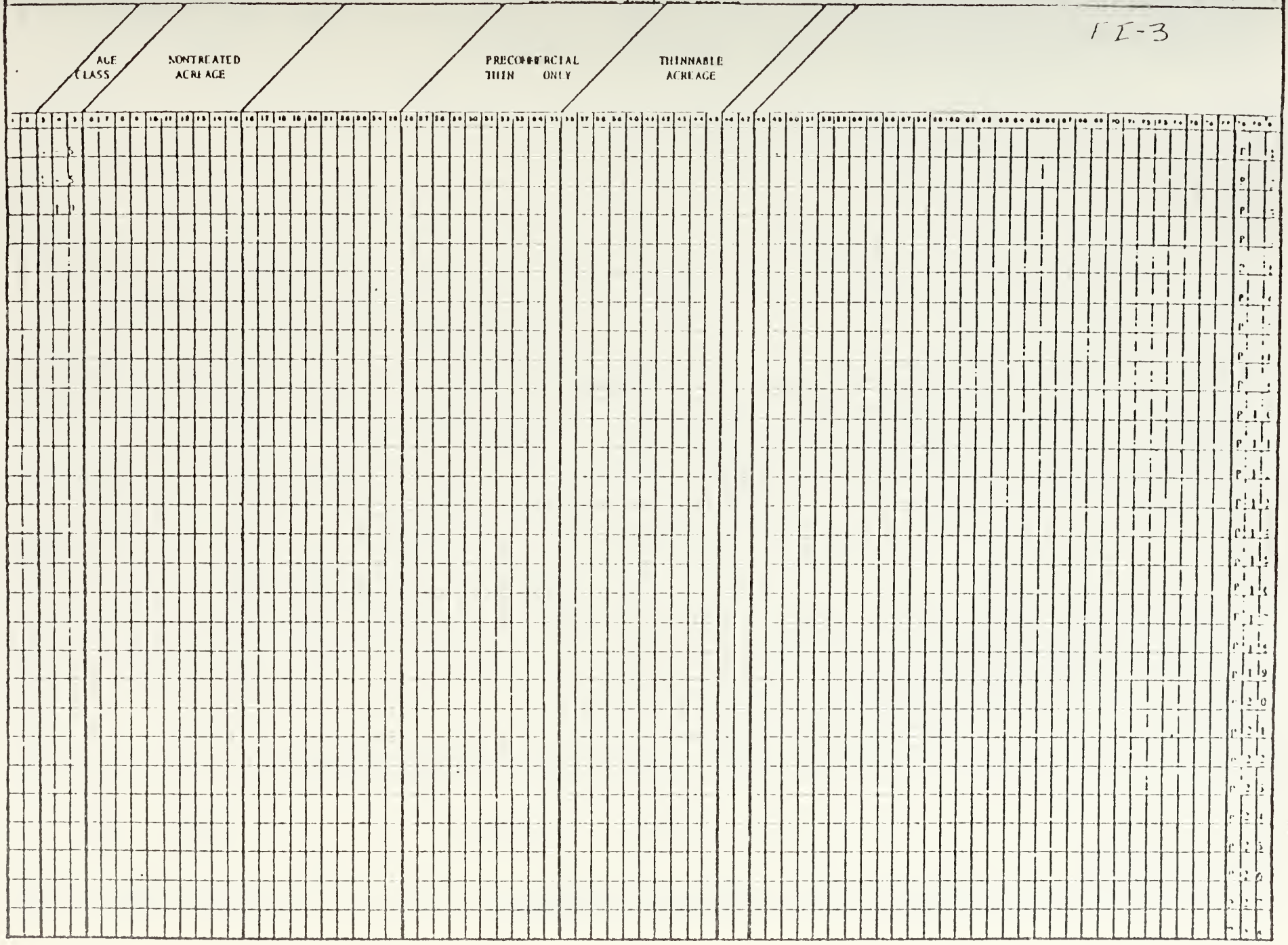
PRECOMMERCIAL THIN ONLY

THINNABLE ACREAGE

AGE CL



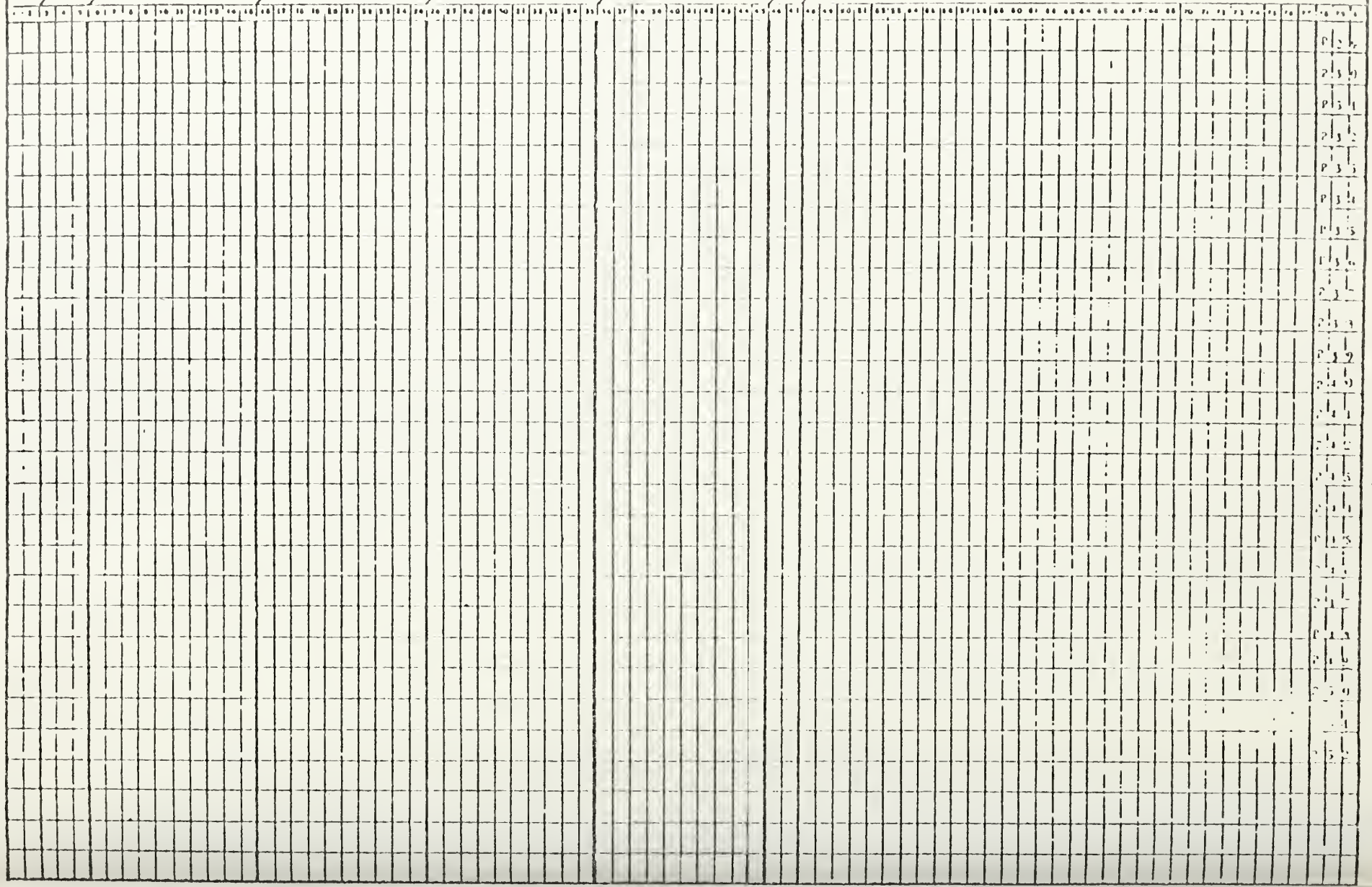
FE-3


AGE CLASS
NONTREATED ACREAGE
PRECOMMERCIAL THIN ONLY
THINNABLE ACREAGE

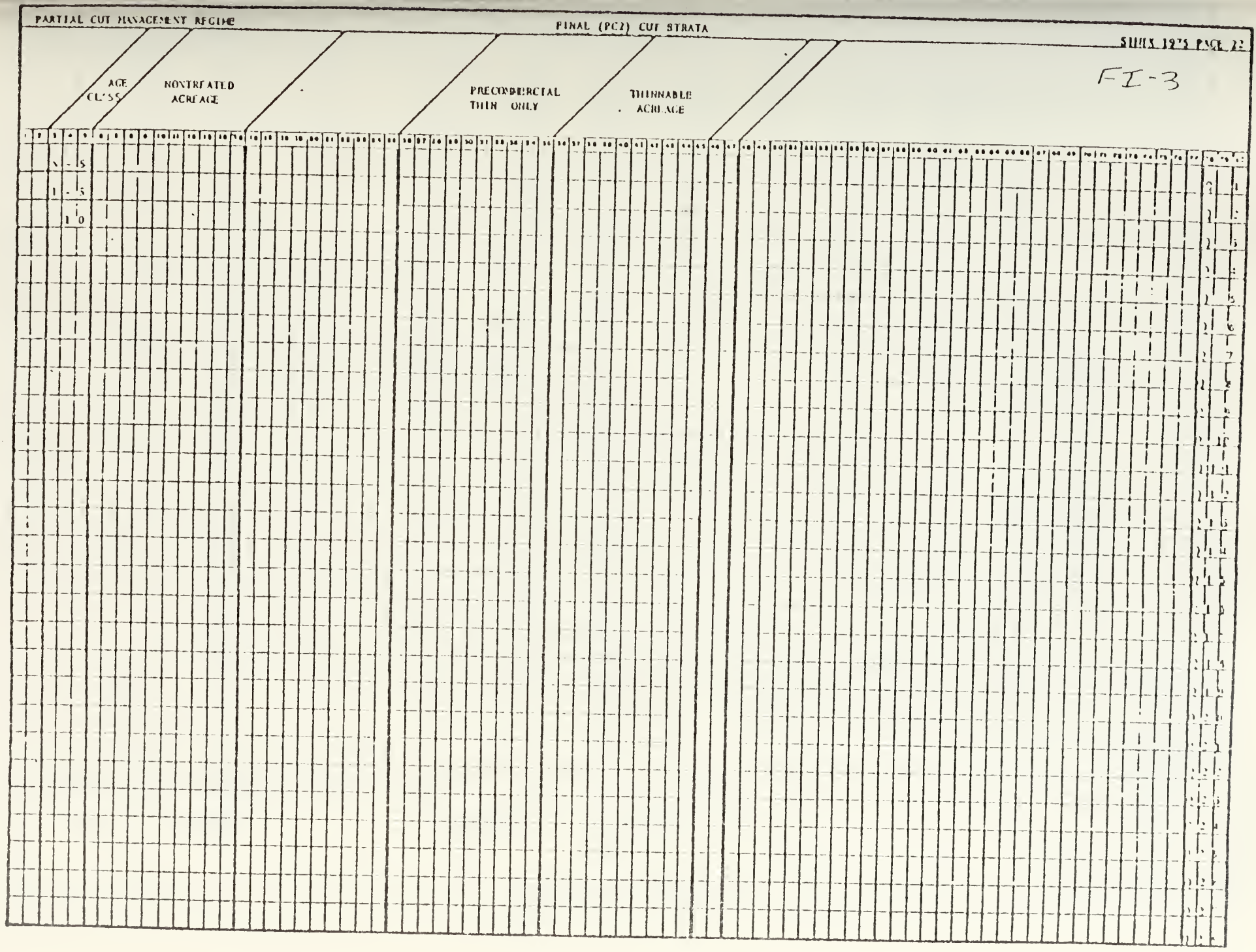
FR-201

PARTIAL CUT MANAGEMENT REGION — INTERMEDIATE (PCI) CUT STRATA (Continued) — SIMEX 1973 — PAGE 21

12-3



FR-202

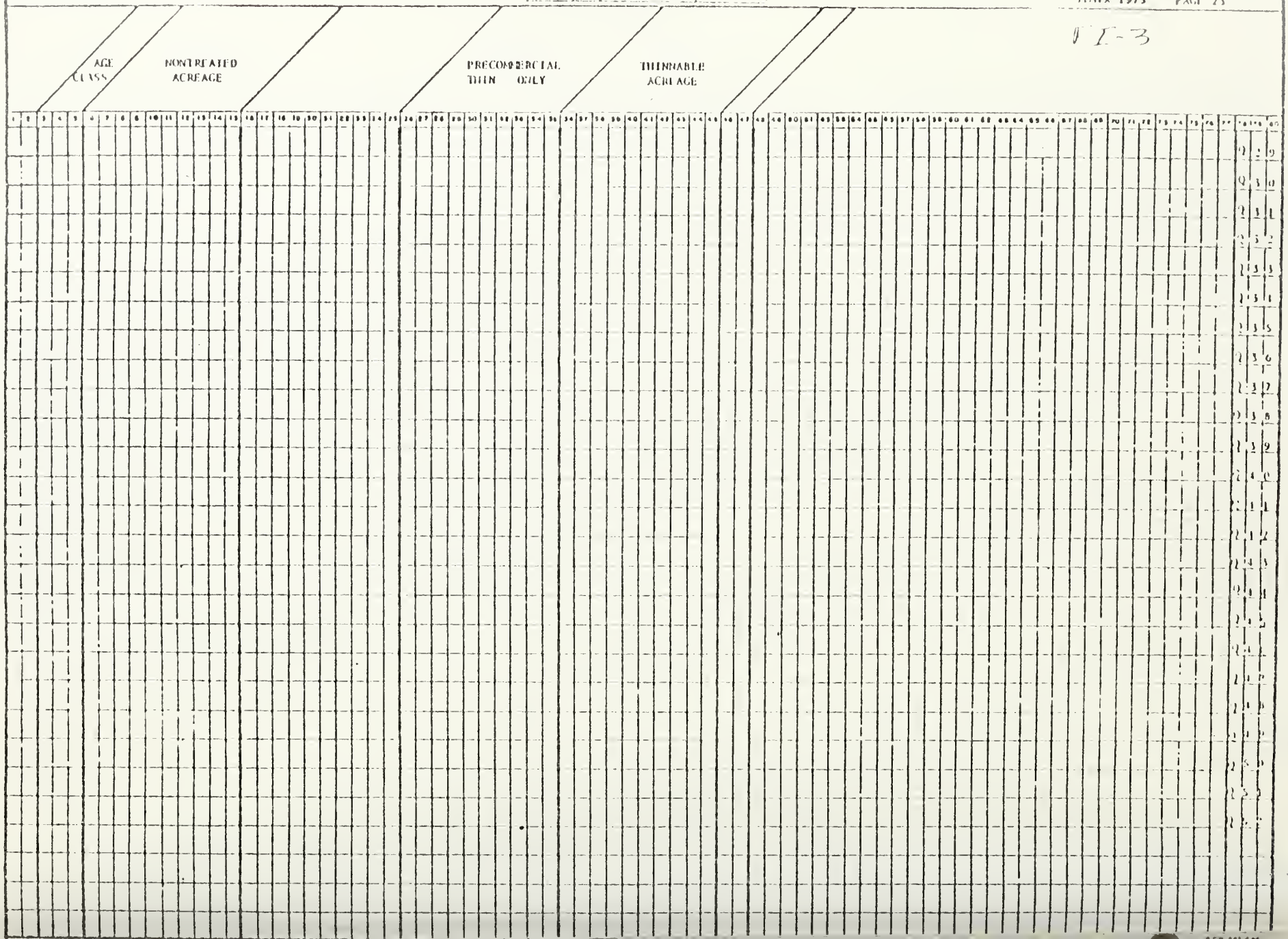

PARTIAL CUT MANAGEMENT REGIME
FINAL (PC2) CUT STRATA
SUNYS 1975 PAGE 22
FI-3
AGE CLASS
NONTREATED ACREAGE
PRECOMMERCIAL THIN ONLY
THINNABLE ACREAGE
1 - 5
1 - 5
1 0

PARTIAL CUT MANAGEMENT REGIME

FINAL (PC2) CUT STRATA (Continued)

SIMEX 1975 PAGE 23

VI-3



FR-204

Prog. Area: Forestry
Prep. By: Costello
Date: 2 Aug 1977

FI-4

DATA SOURCE DESCRIPTION
(DATA BASE MAINTENANCE)

TITLE/DESIGNATION: Timber Production Capability (TPCC) Map

FORM: Map

DESCRIPTION: A map showing the TPCC direct input.

PREPARATION RESPONSIBILITY: District

FORMAT: See attached.

DATA ENTRY PROCEDURE: To be determined.

FREQUENCY OF UPDATE: Updating of a TPCC map is extremely infrequent - perhaps once every 4 to 5 years.

VOLUME OF UPDATE: 10% of the district forest land/year with at least one stand per map.

ARCHIVING REQUIREMENTS: Replace existing data with any new data and discard old data.

ACCESS LIMITATIONS: To be determined.

SPECIAL EDIT/AUDIT/VALIDATION REQUIREMENTS: Check to see that all polygons have data within a unit.

REMARKS: Data may also be entered on the Stand Treatment and Area Data Form, FI-10.

FI-4

Timber Production Capability Classification Map

State (0100-0690) P.U. (0100-5707)

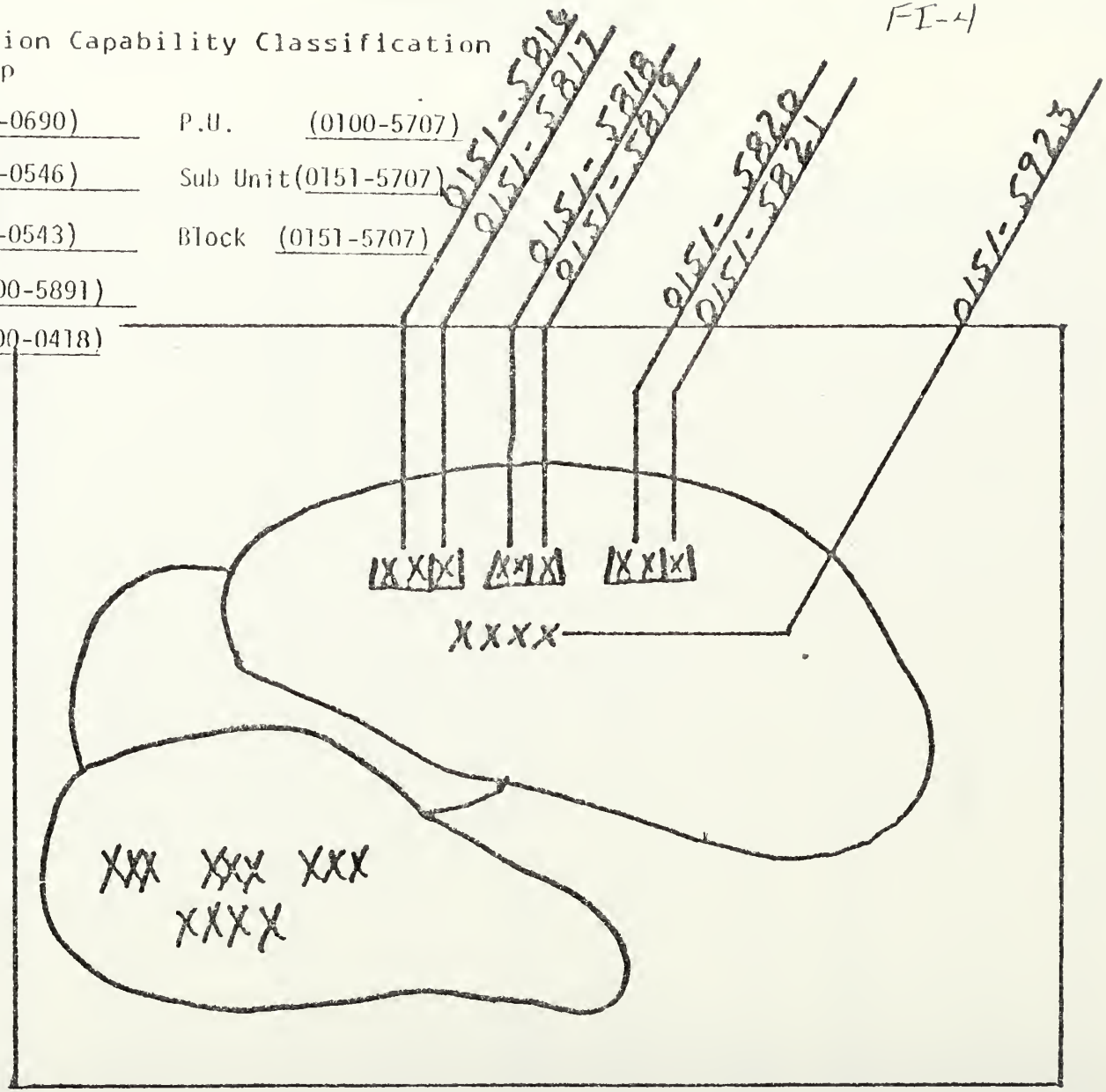
County (0100-0546) Sub Unit (0151-5707)

District (0100-0543) Block (0151-5707)

Master Unit (0100-5891)

Resource Area (0100-0418)

Control Points



FI-5

Prog. Area: Forestry
Prep. By: T. R. Costello
Date: 17 Aug 1977

DATA SOURCE DESCRIPTION
(DATA BASE MAINTENANCE)

TITLE/DESIGNATION: STAND SUMMARY RECORD

FORM: Field or office notes

DESCRIPTION: Direct input of stand data from available sources

PREPARATION RESPONSIBILITY: District foresters

FORMAT: See attached

DATA ENTRY PROCEDURE: To be determined

FREQUENCY OF UPDATE: Approximately one stand per district per year

VOLUME OF UPDATE: 15,000 stands per year will have data added to the system

ARCHIVING REQUIREMENTS: Yes - needs will be determined later.

ACCESS LIMITATIONS: None

SPECIAL EDIT/AUDIT/VALIDATION REQUIREMENTS: These will be developed later

REMARKS: The stand summary record, forest stand map and stand treatment will be entered together.

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

Entered by: ______________________ NAME

ENTRY 8518 (37)			RE EVALUATION DATE 5821 (38)		
YR	MO	DAY	YR	MO	DAY

FLIGHT NUMBER — ROLL NUMBER — FRAME NUMBER

FI-5

STAND SUMMARY RECORD

LEVEL 1

LOCATION																										DATA SOURCE				SITE CLASS		SITE INDEX		BAS		
TRANSACTION CODE	SUBUNIT BLOCK 5707	STAND ID # 5921	STATE Geographic 0690	DISTRICT 0548	MASTER UNIT 5891	COUNTY or BOROUGH 0540	RESOURCE AREA 0418	PLANNING UNIT 1075	STATE ADM 0004		MERIDIAN 1703	TWP 1695 WHOLE	TWP FRACTION	TWP DIRECTION	RANGE 1649 WHOLE	RANGE FRACTION	RANGE DIRECTION	Section 2506		Acres 6520						DATA SOURCE 5908	DATE 8518 YEAR	DATE MONTH	Forest-, vegetative sub-type 5766 82706	TYPE 5926	SITE 5751	TYPE 5927	SITE 5750	BASAL AREA STANDARD 6142		
42	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36

LEVEL 2 / LEVEL 3

STAND DESCRIPTION																			
STAND COMPONENT 5928	SPECIES 6100	SPECIES 6100	SPECIES 6100	SIZE CLASS TYPE 5816	SIZE CLASS class 5810	STOCKING CLASS 5770	BIRTH DATE (Years) EVEN AGE STAND OR START OF AGE RANGE IN UNEVEN AGE STAND 5812	BIRTH DATE (Years) DECADES IN UNEVEN AGES RANGE 5912	BASAL AREA PER ACRE 5781	DIAMETER 5930 MINIMUM	DIAMETER AVERAGE	DIAMETER MAXIMUM	TOTAL HEIGHT AVERAGE 5799	TOTAL HEIGHT MAXIMUM 5929					
11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50

LEVEL 3

VOLUME PER ACRE									
SPECIES 6100	TYPE OF VOLUME 5908	Unit of measure 5872	PRODUCTS 5759	VOLUME 5871					
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80

Remarks:

ABCDEFGHIJKLMNØPQRSTUVWXYZ 1234567890

DSC 5250-1 (MARCH 1978)

FI-5

Prog. Area: 0131
Prep. By: Lund
Date: 2 Aug 77

FI-7

DATA SOURCE DESCRIPTION
(DATA BASE MAINTENANCE)

TITLE/DESIGNATION: Tree Measurement Short Form

FORM: Field Notes

DESCRIPTION: This form is to be used when the inventory crew does not have the experience necessary to make good ocular estimates; when some type of quantifiable measurements are needed; or when the value of the resource does not justify more detailed measurements. The form allows for use of either fixed area or variable plots.

PREPARATION RESPONSIBILITY: District Inventory Form

FORMAT: See attached.

DATA ENTRY PROCEDURE: Batch

FREQUENCY OF UPDATE: Once every 10 years per stand/site writeup area

VOLUME OF UPDATE: 1 form/stand

ARCHIVING REQUIREMENTS: Keep until replaced by a more intense or current inventory.

ACCESS LIMITATIONS: None.

SPECIAL EDIT/AUDIT/VALIDATION REQUIREMENTS: Edit for valid codes. Other edit parameters to be developed.

REMARKS:

TREE MEASUREMENT — STAND EXAM

AREA IDENTIFICATION

STATE (0670) 1
COUNTY (0346) 2
DISTRICT (0343) 3
PLANNING UNIT (0731) 4
HB UNIT (3707) 5
ALLOTMENT (0768) 6
STRATA OR (3378) 7
RANGE SITE No. (3721) 7
STAND OR SITE 8
WHITE HP AREA No. (3007) 8

TRANS ACTION CODE (1176) 9
STATE Adm (0004) 10
NUMBER OF LINES ENTRIES 11
DATE OF SURVEY (6230) 12 YR MO DAY

BAF (6137) 13
FIXED PLOT AREA (3125) 14 15

SITE TREE DATA

SCIENTIFIC PLANT NAME (2696)	TOTAL AGE (6138)	DIAMETER DCH (6131)	DIAMETER DSH (6008)	DIAMETER DBH	TOTAL HEIGHT (6116)	RADIAL GROWTH (6117)
37 30 23 XXXXXX	31 24 XXX	32 25 XX.X	33 26 XX.X	34 27 XXX.X	35 28 XXX	36 29 XXX

PHOTO DATA

STAND DENSITY (6510) 44
AVE CROWN DIAMETER (6004) 45
VEGATATIVE TYPE & SUB TYPE (2706) 46
AVE STAND HEIGHT 47 (5114)
LAND FORM 48 (5112)
LAND USE PHOTO 49 (6101)

	EAST-WEST (6122)	TREE NUMBER (6111)	SCIENTIFIC PLANT NAME LEFT JUSTIFY (2696)	TREE HISTORY (6115)	DIAMETER DCH (6131)	DIAMETER DSH (6008)	DIAMETER DBH (6116)	TOTAL HEIGHT (6113)	MERCH HEIGHT (6137)	CROWN WIDTH (6190) NAR.	CROWN WIDTH (6190) WIDE	No. OF STEMS (6109)	TOTAL AGE (6138)	NUMBER OF TREES (6139)	CHRISTMAS TREE GRADE (6124)	PRODUCTS POSTS STAY (5871)	PRODUCTS POSTS LINE (5871)	PRODUCTS POSTS COR. (5871)	TREE OF COUNT CLASS (6125)	EDIT	
	17	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
	X	XXX	XXXXXX	XX	XX.X	XX.X	XXX.X	XXX	XXX	XX	XX	XX	XXX	XX	X	XX	X	X	XX			

FIELD | OFFICE

REMARKS

FI-7

FR-210

ABCDEFGHIJKLMNØPQRSTUVWXYZ 1234567890

DSC 5250-3 APR 1978 FRC

PLOT OR POINT NO.	XX
PLOT TYPE 5924	X
TREE NUMBER	XXX
SCIENTIFIC PLANT NAME (LIST 1ST)	XXXXXXX
TREE HISTORY	XX
DIAMETER DCH	XX.X
DIAMETER DSH	XXX
DIAMETER DBH	XXXX
TOTAL HEIGHT	XXX
MERCH HEIGHT	XXX
CROWN WIDTH NAR	XX
CROWN WIDTH WIDE	XX
No. OF STEMS	XX
AGE	XXX
NUMBER OF TREES	XX
PRODUCTS CHRISTMAS TREE	X
PRODUCTS POST STAY	XX
PRODUCTS POST LINE	X
PRODUCTS POST COR	X
TREE OR COVER CLASS 5125	XX
REMARKS	

Prog. Area: Forestry
Prep. By: T. R. Costello
Date: 17 Aug 1977

FI-8

DATA SOURCE DESCRIPTION
(DATA BASE MAINTENANCE)

TITLE/DESIGNATION: BLM Tree Sample Record

FORM: Date comes from Field Notes

DESCRIPTION: This form will be used for remeasurement, new measurement, for extensive and intensive forest inventory.

PREPARATION RESPONSIBILITY:
District Office

FORMAT:
See attached form

DATA ENTRY PROCEDURE:
Batch

FREQUENCY OF UPDATE:
31,000 stands/year if ten percent of each district is done each year

VOLUME OF UPDATE:
15,000 stands/year will have data changes
There will be approximately 1-50 forms per stand.

ARCHIVING REQUIREMENTS:

To be determined

ACCESS LIMITATIONS:
None

SPECIAL EDIT/AUDIT/VALIDATION REQUIREMENTS:
A compatibility edit will be developed later for all data elements on this form. The edit will be simular to the edit used in system 0013.

REMARKS:
The data on the BLM TREE Sample Record will be processed and item reviewed by the user.

This form will be accompanied by a stand map and stand treatment and area data.

USC
AUG 1977

BLM TREE SAMPLE RECORD

Page _____ of _____

LOCATION

STATE	DISTRICT	MASTER UNIT	RESOURCE AREA	PLANNING UNIT	BLOCK OR SUBUNIT	FOREST STAND OR PLOT NO	SUSTAINED YIELD UNIT NUMBER	DATE OF SURVEY YR	MO	DAY
XX	XX	XX	XX	XX	XX	XXXX OLD / NEW	XX OLD / NEW	XX	XX	XX

PLOT TYPE

BAF 6137

FIX PLOT AREA
AREA 1
AREA 2
0125

NO OF LINES

ROUTE TO RP & REMARKS

AGE TO BH

FIELD CREW
LEADER
ASS'T

PLOT LOCATION

RP TO PLOT
SP DBH AZ DIST

POINT 1 REFERENCE
SP DBH AZ DIST
1
2

PHOTOS
Scale
Symbol Roll
PHOTO NOS

LEGAL DESCRIPTION
T R Sec
MERIDIAN
DECLINATION

POINT LAYOUT

EDIT
FIELD OFFICE

TREE IDENTIFICATION / TREE MEASUREMENT / TREE CLASSIFICATION / REMARKS

TRANSECT	PLOT OR POINT NO	TREE NO	AZIMUTH	DISTANCE	TREE HISTORY	SPECIES	NUMBER OF TREES	PAST D.B.H.	PRESENT D.B.H.	DIB AT ONE FOOT	BARK THICKNESS	10 YEAR RAD. GRO.	TREE AGE @ D.B.H.	TOTAL HEIGHT	MERCH. HEIGHT	LOG GRADE	SURFACE DEFECT LIVE	SURFACE DEFECT DEAD	CROWN RATIO	CROWN CLASS	CROWN DIAMETER	DAMAGE CAUSE OF DEATH	SEVERITY	LOG DEDUCTION CODE: XX LOG POSITION / XX TYPE DEFECT / XX % DEDUCTION				TREE OR OVER CLASS	REMARKS
XX	XX	XXX	XXX	XXX	XX	XXX	XX	XXXX	XXXX	XXXX	XXX	XXX	XXX	XXX	XXX	X	X	X	X	X	XX	XX	XX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XX	

FR-213

FT-8

FI-9

Prog. Area: Forestry
Prep. By: Costello
Date: 2 Aug 77

DATA SOURCE DESCRIPTION
(DATA BASE MAINTENANCE)

TITLE/DESIGNATION: FOREST STAND MAP

FORM: Map or photo

DESCRIPTION: This map will be used as input with the forest stand description, BLM tree sample record, field predictions, etc.

PREPARATION RESPONSIBILITY: District forestry staff

FORMAT: See attached

DATA ENTRY PROCEDURE: To be determined

FREQUENCY OF UPDATE: Once a year per district

VOLUME OF UPDATE: 10% of the stands per district per year. Map can contain 1-X stds.

ARCHIVING REQUIREMENTS: Some data will be needed for historical and trend information.

ACCESS LIMITATIONS: None

SPECIAL EDIT/AUDIT/VALIDATION REQUIREMENTS: Computer edits and visual edits will be needed.

REMARKS: A map will be required for all forms of forest stand input. One Map may have many stands shown. This form will be entered with STAND TREATMENT AND AREA DATA or BLM Tree Sample Record or Stand Summary Record or Forest Stand Field Predictions.

FI-9

FOREST STAND MAP

State 0100-0690 or 0100-0004

County 0100-0546

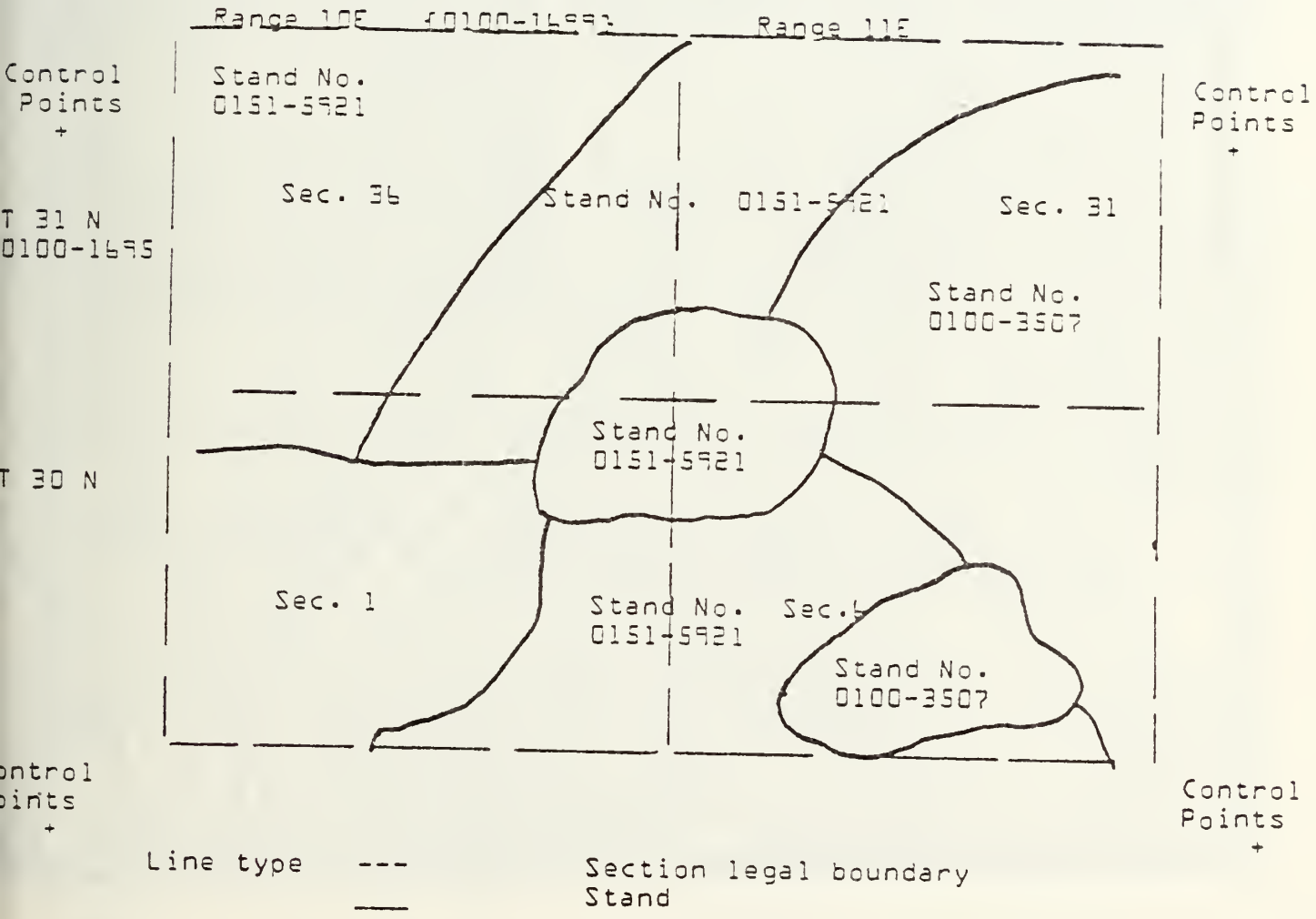
District 0100-0543

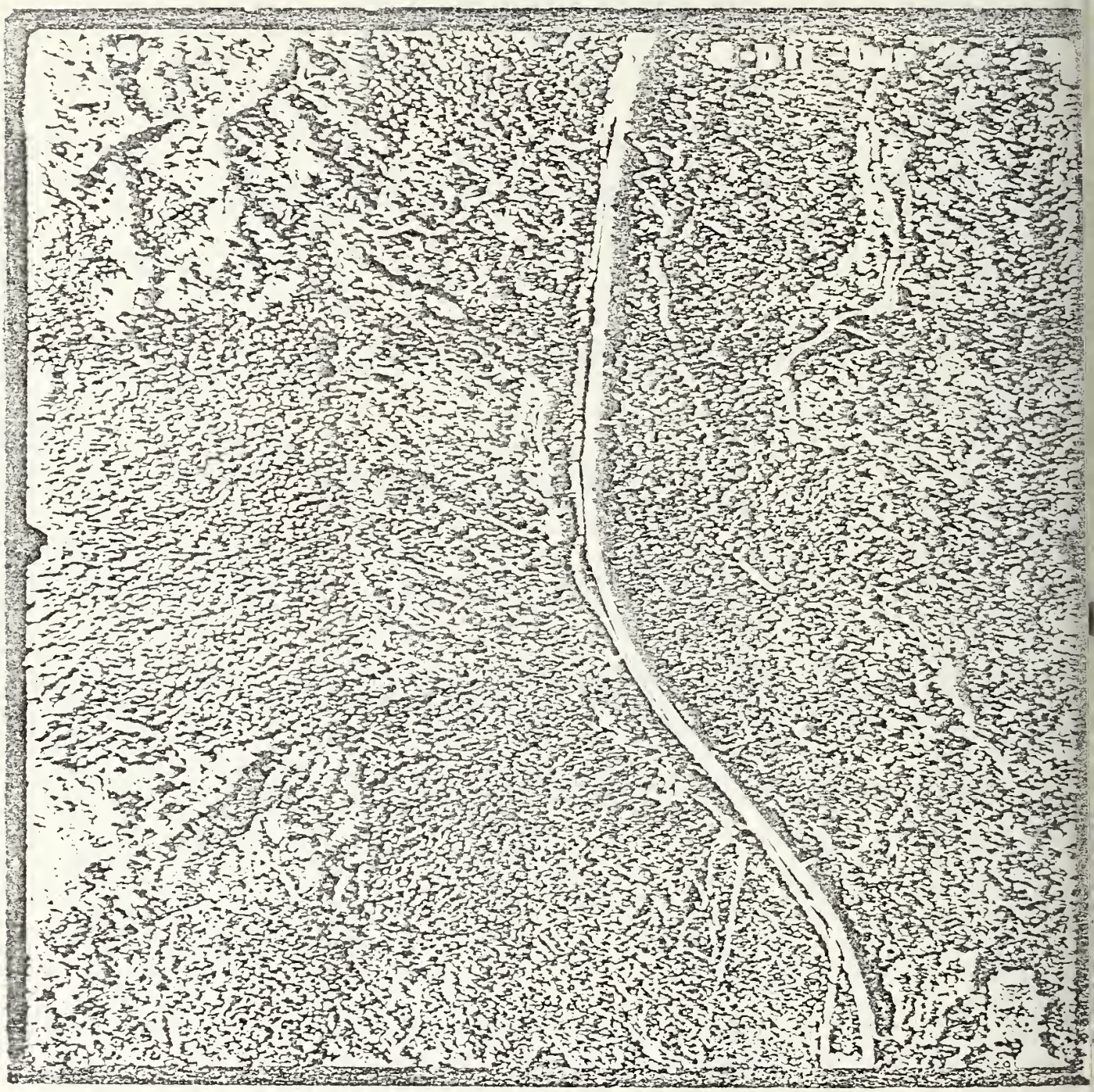
Master Unit 0100-5891

Resource Area 0100-0418

Planning Unit 0100-1075

Sub Unit & Block 5707





FI-10

Prog. Area: Forestry
Prep. By: Costello
Date: 2 Aug. 77

DATA SOURCE DESCRIPTION
(DATA BASE MAINTENANCE)

TITLE/DESIGNATION: STAND TREATMENT AND AREA DATA

FORM: Field Notes

DESCRIPTION: This form is used to directly input forest stand descriptions.

PREPARATION RESPONSIBILITY: District Forestry Staff

FORMAT: See attached

DATA ENTRY PROCEDURE: to be determined

FREQUENCY OF UPDATE: 1 per stand per district per year

VOLUME OF UPDATE: 10% of the stands/District/year

ARCHIVING REQUIREMENTS: Some of the past data will need to be retained indefinitely. Past treatments will be held forever.

ACCESS LIMITATIONS: None

SPECIAL EDIT/AUDIT/VALIDATION REQUIREMENTS: Compatability edits will be developed for this data later.

REMARKS: This form will be entered with a stand map, a stand summary record, and with the BLM tree sample record.

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

ENTERED BY

NAME

STAND TREATMENT AND AREA DATA

FI-10

RECORD 1

LOCATION

AREA DATA

STAND ACCESS

DATA SOURCE

HABITAT RD

FOREST CONDITION

FFCC

PAST TREATMENT

RECOMMENDED TREATMENT IN ORDER OF NEED

FR-218

DSC 5230-2 (MARCH 1978)

Prog. Area: Forestry
Prep. By: T. R. Costello
Date: 16 May 77

FI-15

DATA SOURCE DESCRIPTION
(DATA BASE MAINTENANCE)

TITLE/DESIGNATION: Reforestation Record Card

FORM: Field Notes

DESCRIPTION:

This form is completed during a reforestation survey

PREPARATION RESPONSIBILITY:

District Forestry Staff

FORMAT:

See attached

DATA ENTRY PROCEDURE:

To be determined

FREQUENCY OF UPDATE:

One set of forms per stand will be submitted each year

VOLUME OF UPDATE:

500 stands per district per year

ARCHIVING REQUIREMENTS:

Retain historical date indefinitely

ACCESS LIMITATIONS:

None

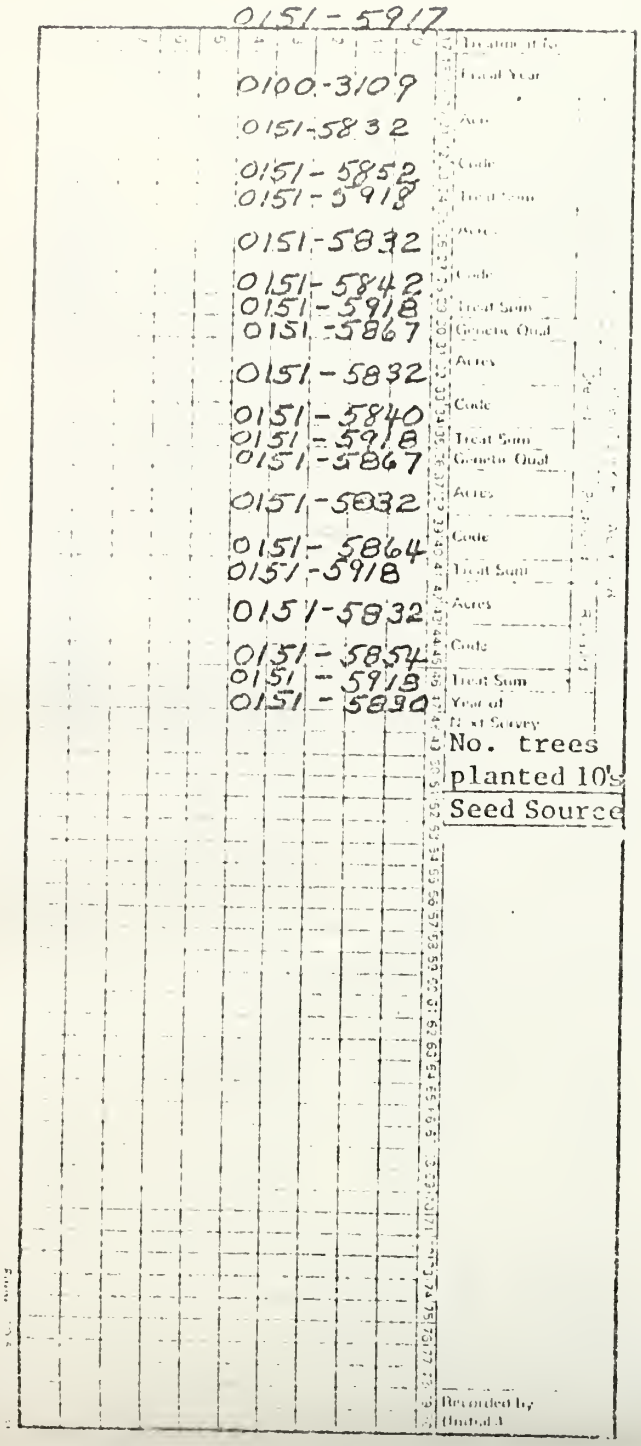
SPECIAL EDIT/AUDIT/VALIDATION REQUIREMENTS:

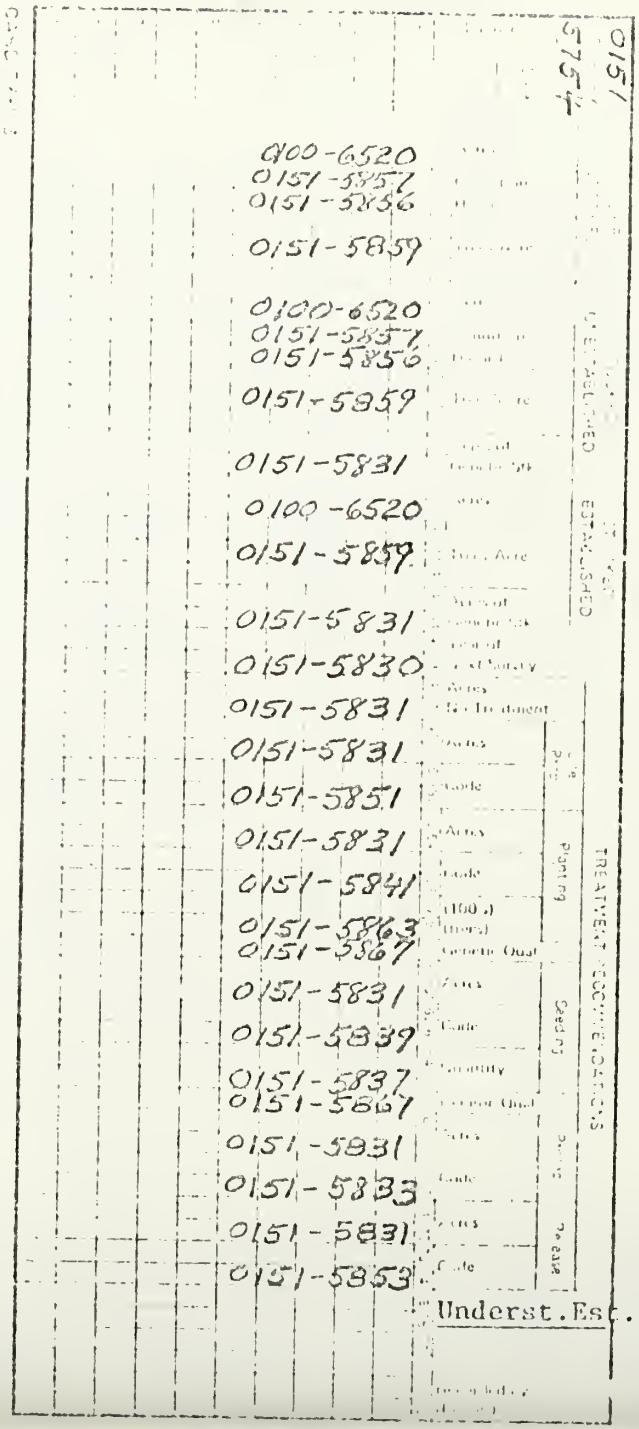
To be developed

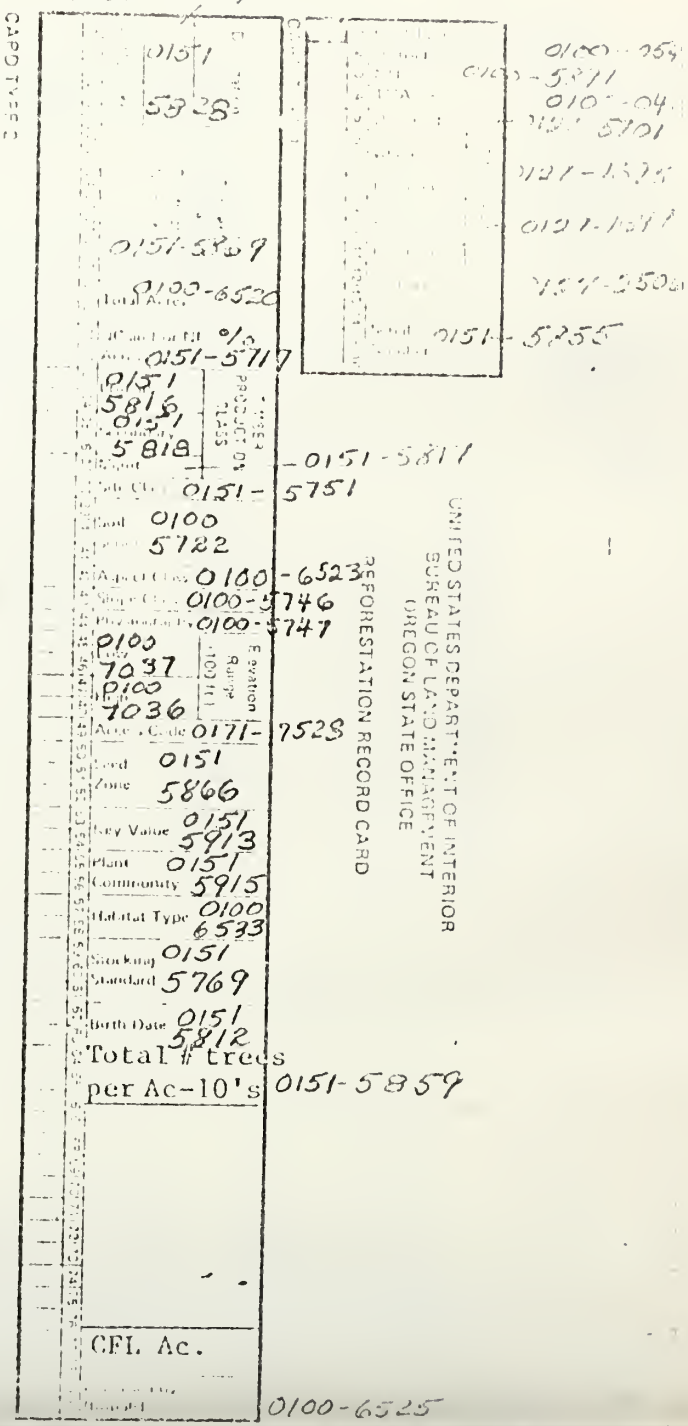
REMARKS:

This form will be combined with a stand map

This data is being used with the Oregon State Office Surge Program


0151-5917
0100-3109
0151-5832
0151-5852
0151-5918
0151-5832
0151-5842
0151-5918
0151-5867
0151-5832
0151-5840
0151-5918
0151-5867
0151-5832
0151-5864
0151-5918
0151-5832
0151-5854
0151-5918
0151-5830
No. trees planted 10's
Seed Source


0151-5754
0100-6520
0151-5857
0151-5856
0151-5859
0100-6520
0151-5857
0151-5856
0151-5859
0151-5831
0100-6520
0151-5859
0151-5831
0151-5830
0151-5831
0151-5831
0151-5851
0151-5831
0151-5841
0151-5863
0151-5867
0151-5831
0151-5839
0151-5837
0151-5867
0151-5831
0151-5833
0151-5831
0151-5853
Understory Est.


0151-5829
0151
5828
0151-5859
0100-6520
0151-5717
0151
5816
0151
5818
0151-5811
0151-5751
0100
5722
0100-6523
0100-5746
0100-5747
0100
7037
0100
7036
0171-7528
0151
5866
0151
5913
0151
5915
0100
6533
0151
5769
0151
5812
Total # trees per Ac-10's 0151-5859
CFL Ac.
0100-6525
0151-5255
UNITED STATES DEPARTMENT OF INTERIOR
BUREAU OF LAND MANAGEMENT
OREGON STATE OFFICE
REFORESTATION RECORD CARD

UNITED STATES DEPARTMENT OF INTERIOR
BUREAU OF LAND MANAGEMENT
OREGON STATE OFFICE

REFORESTATION RECORD CARD

FR-220

Prog. Area: Forestry
Prep. By: [illegible]
Date: 19 May [illegible]

FE-16

DATA SOURCE DESCRIPTION
(DATA BASE MAINTENANCE)

TITLE/DESIGNATION: Insect and Disease Aerial Detection Report

FORM: Field Data Sheets

DESCRIPTION: This form indicates the existence of insect damage or disease detected by an aerial survey.

PREPARATION RESPONSIBILITY:

US Forest Service

FORMAT:

See Attached

DATA ENTRY PROCEDURE:

Batch

FREQUENCY OF UPDATE:

Once a year per district

VOLUME OF UPDATE:

Approximately 100-500 per district

ARCHIVING REQUIREMENTS:

To be determined

ACCESS LIMITATIONS:

None

SPECIAL EDIT/AUDIT/VALIDATION REQUIREMENTS:

To be developed

REMARKS:

FE-16

INSECT AND DISEASE AERIAL DETECTION REPORT

(100-6630)
Date

(100-1695) (100-1699) (100-2506)
Location: T____, R____, Sec.____

Description of Location: (0100 6957)

Ownership: ~~(122-2201)~~ (0151-5895)

Tree Species (151-6100)

Size Class (0151-5875)

No. of trees: Single ____

Group ____

Size of Group ____

Acreage (0100-6520)

Affected trees/acre (0151-5772)

Status: (151-6019) Increasing ____, Decreasing ____, Static ____.

(151-6020) Large area ____, Small Area ____, Scattered ____.

Diagnosis (151-6018)

Remarks (0100-6957)

Is ground check needed? ____ (151-6017)

by Land manager ____, Entomologist ____,

Pathologist ____.

Date of ground check (100-6630), by ____

Map on reverse

FI-16

AERIAL SURVEY MAPPING LEGEND

Color	Bark Beetles	Defoliators or Other Damage
Blue	1-5 trees per group	Light
Green	6-10 trees per group	Moderate
Orange	11-25 trees per group	Heavy
Red	25-50 trees per group	Severe

Over 50--Number in symbol indicates nearest hundred trees

Symbols in Above Color Code

Mountain Pine Beetle

Douglas-fir Beetle

 Engelmann Spruce Beetle

Spruce Budworm

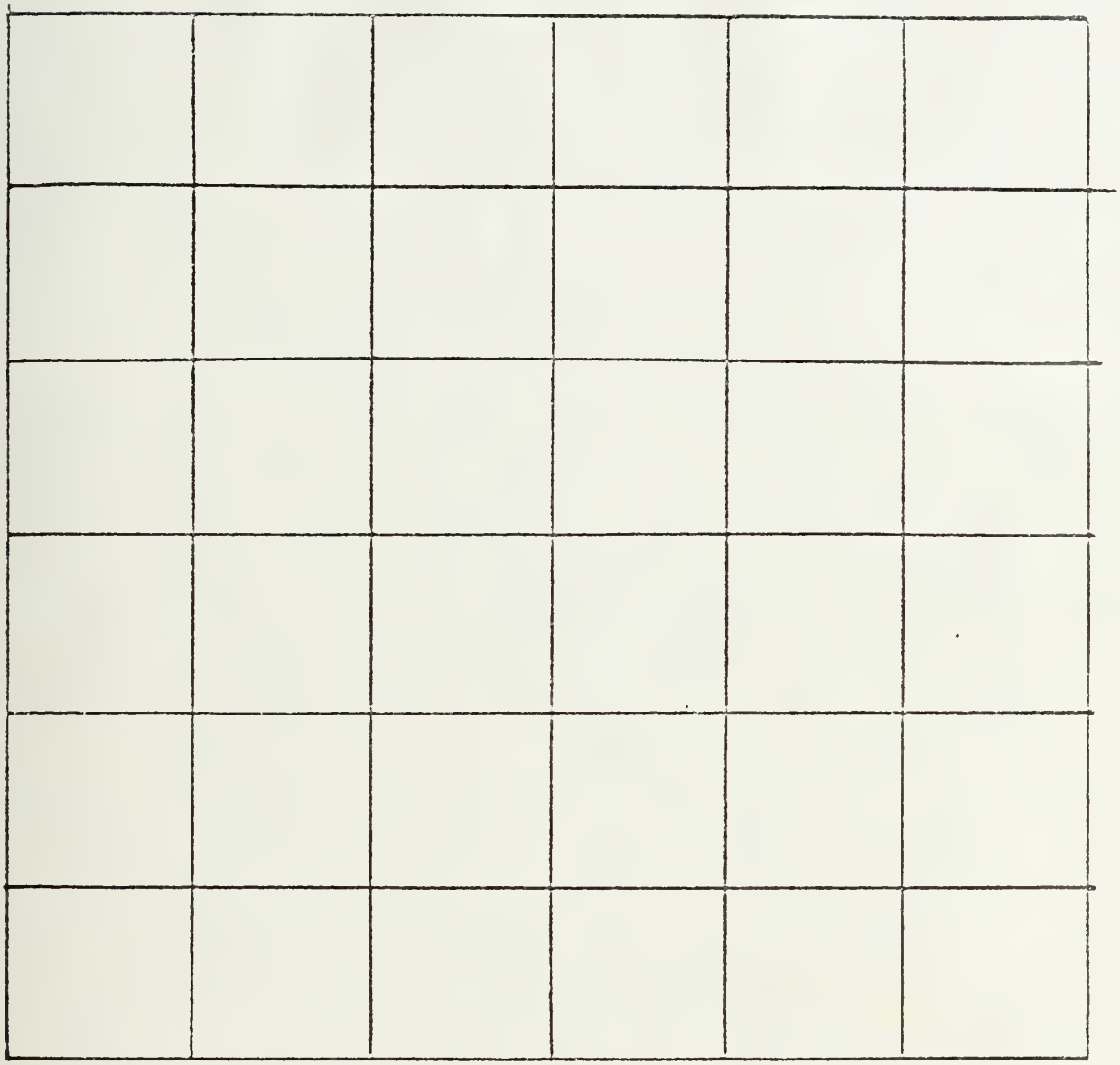
Other Damage (see letter coding below)

Letter Code
(Black superimposed on "other damage" symbol)

Insects		Disease		Other	
B	broadleaf defoliator	C	comandra rust	B	blowdown
E	engraver beetle	IS	ink spot disease	F	frost damage
T	tent caterpillar	Y	unknown	R	porcupine
I	Ips			Z	unknown
N	needle miner				
P	pandora moth				
X	unknown insect				

FE-16

North



Directions:

MEMORANDA

Form 1279-3
(June 1984)

BORROWER'S CARD

HD
183
.L3
L372
1978

User requirements document f
resource inventory - UKA inf

DATE LOANED	BORROWER

USDI - BLM

Bureau of Land Management
Library
Bldg. 50 Denver Federal Center
Denver, CO 80225